

**FINAL
ENVIRONMENTAL IMPACT STATEMENT**

**Continued Operation of K-, L-, and P-Reactors
Savannah River Site
Aiken, South Carolina**

Volume II



December 1990

U.S. Department of Energy

TABLE OF CONTENTS

<u>Table</u>	<u>Page</u>
C-6 Public Comments and DOE Responses - Savannah	C-344
C-7 Public Comments and DOE Responses - Columbia	C-516
C-8 Public Comments and DOE Responses - Aiken	C-782

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-01	STATEMENT OF LARRY STUBER Chairman, Natural Resources and Environmental Council Savannah Area Chamber of Commerce MR. STUBER: My name is Larry Stuber. I am Chairman of the Natural Resources and Environmental Council of the Savannah Area Chamber of Commerce. And I'm not sure of their address. It's West Oglethorpe Avenue, I don't remember the number. Mr. Chairman, it's a pleasure to attend this public meeting representing the business community and more particularly the Savannah Area Chamber of Commerce. The Chamber and its membership have followed with interest the Department's deliberation regarding restart of the K-Reactor at the Savannah River Site in December and the L- and P-Reactors during 1991.	
C-344 S-01-01	We are here today to express concerns about the restart of any reactor prior to (1) the cleanup of damage from the numerous serious reactor accidents which have occurred in the past and (2) the completion of safety tests recommended by various oversight groups.	The accident experience of the SRS reactors is described in Section 4.1.3 of the EIS. There are no past reactor accidents for which cleanup is currently required.
S-01-02	To repeat testimony we have given in the past, we stress that there be an emphasis placed on safety, training and clear-cut plans of action in the event of an emergency. You can imagine this community's discomfort situated downwind from the Savannah River Site and learning that restart of the reactors is planned prior to the completion of certain safety tests and cleanup for which recommendations have been made and, in some cases, assurances have been given by DOE. Our longstanding concerns regarding the Savannah River Site are illustrated by the fact that for many years the Savannah Area Chamber of Commerce carried a strong message to our U.S. Representatives in support of independent oversight of the Savannah River Site from an outside agency or group.	Sections 2.1.2.8.2 and 2.1.2.7 of the EIS address the concerns about reactor safety and the reactor modifications to be completed as safety enhancements both before and after resuming production. As stated by Secretary Watkins on several occasions: "restart of any of the SR reactors will not be authorized until I am personally satisfied that they can be operated safely" (Memo, Secretary of Energy Watkins to Secretary of Defense Cheney, April 1989).
S-01-03	Since Presidential appointment of the Defense Nuclear Facilities Board has been very recent, it is unclear the impact this board will have, an independent oversight group.	The Defense Nuclear Facilities Safety Board (DNFSB) was established by Public Law 100-456 to provide independent, high-level, safety oversight of DOE facilities. DNFSB will provide its judgment on the readiness of the reactors to resume operation.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	However, we urge at this time inclusion in this EIS that safety and cleanup recommendations from such groups at DOE's Advisory Committee on Nuclear Facilities Safety and the General Accounting Office. We are appreciative of this opportunity to express our concerns and our request that all safety, preventive and emergency procedures be fully in place and that all appropriate environmental cleanup and safety testing be completed before any additional reactor capacity or activity is approved for the Savannah River Site. Thank you.	Revised Section 2.1.3.3 of the EIS describes the functions and powers of the DNFSB and some of its recent recommendations.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-2	STATEMENT OF U.S. REP. LINDSAY THOMAS Prepared for the Record at the Department of Energy Hearing May 31, 1990 I am Ms. Trish Depriest from the office of Congressman Lindsay Thomas. Mr. Thomas regrets that he is unable to be at the hearing today because of his previous schedule commitments in the First District. However, he has directed that I present this statement in his behalf.	
S-02-01	As many in the audience already know, Congressman Thomas has a long-standing interest, concern, and involvement with the activities of the Savannah River Site. His specific concern is safety. As a member of the Appropriations Committee, Mr. Thomas secured a seat on the Subcommittee on Energy and Water Development in part in order to have a voice in the activities of SRS.	Please see the response to Comment S-01-02 on safety.
S-02-02	From that position, he included appropriations report language last year calling for the establishment of a firm schedule from DOE for the permanent closure and cleanup of water seepage basins at SRS which contain radioactive and non-radioactive waste.	DOE has committed to a program of environmental restoration of its sites, including SRS, a program which is under way and is funded independently of reactor operation. Waste management activities at SRS are described in detail in other EISs, Waste Management Activities for Groundwater Protection and Defense Waste Processing Facility (DOE/EIS-0120); (DOE/EIS-0082) DOE's Environmental Management and Waste Restoration Five-Year Plan (DOE/S-0070) describe waste management activities at SRS in detail. DOE's proposed programmatic EIS on Waste Management and Environmental Restoration will provide complex-wide assessments of available options. DOE will manage SRS wastes from continued operation in accordance with the requirements of EPA, SCDHEC, and DOE Orders, as described in Section 2.1. and Chapter 5 of this EIS.
S-02-03	He also urged that this EIS be conducted, and that ultrasonic testing be conducted of the K-Reactor containment vessel. He also called for improved emergency notification procedures for state and local authorities in the event of any spills or release of dangerous contaminants. Mr. Thomas is very appreciative that these actions have subsequently been taken.	Specially designed robotic equipment has been developed for the SRS ultrasonic testing tank inspection effort. The P-Reactor tank has been inspected; inspection of K-Reactor is under way. See Section 2.1.2.3 of the EIS for details. Emergency notification procedures are discussed in Sections 2.1.3, 3.9, and 4.1.3.1 of the EIS.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	I should also note that Mr. Thomas has said clearly in the past that the environmental mess at the site is the collective responsibility of DOE, its contractors, several Presidents, <u>and</u> the Congress. For decades, all parties have collectively deferred or ignored their responsibility to deal with the related issues of health, safety and waste management. The bill on that deferral of responsibility has now come due.	
S-02-04	With the clarity of 20-20 hindsight, we can see that the SRS got into the mess it is in today because it was not subject to outside review. Mr. Thomas was instrumental in passage of a provision in the 1989 Defense Department Authorization Bill that mandates an outside review panel.	Please see the response to Comment S-01-03 on DNFSB.
	But because of excessive secrecy in the past, and the pressure to produce weapons-related materials, we put off until tomorrow the things that should have been done today.	
S-02-05	Retired Admiral James D. Watkins, our Secretary of Energy, has changed that pattern, and Congressman Thomas is strongly supportive of his work. However, Mr. Watkins is no stronger than those who carry out his orders, and it must now be made clear to all at DOE that safety comes first, and production comes second.	Please see the response to Comment S-01-02 on safety.
	Towards that end, Mr. Thomas is very pleased to see that the decision has been made by the Secretary not to restart the reactors until an Environmental Impact Statement has been completed and reviewed.	
	Like all laymen, Mr. Thomas must rely on the scientific expertise of others to evaluate the safety of the technical proposals of the EIS. He has asked officials of the State of Georgia to provide their own assessment, and urges that DOE also solicit and heed all input from the State of Georgia and qualified citizens.	
S-02-06	A special concern of Mr. Thomas in relation to current and future operations at SRS is environmental monitoring. In addition to the monitoring of air emissions at SRS, he also insists that ground and surface water monitoring be carried out <u>in Georgia</u> . Based on the advice of the Georgia Department of Natural Resources, Mr. Thomas does not have confidence that the current monitoring of aquifer contamination is sufficient.	DOE has installed more than 900 groundwater monitoring wells at SRS; more are planned. As noted in a letter from Secretary Watkins to Congressman Thomas on May 3, 1990, DOE is working with the U.S. Geological Survey to define a scope of work for a study to determine if there is any groundwater flow under the Savannah River from South Carolina to Georgia.

Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response

DOE believes that well sites in South Carolina are sufficient to monitor any movement of contamination through the aquifer system. Mr. Thomas believes that our scientific understanding of movement through the complex aquifer system is not sufficient to justify the DOE position.

As you know, contaminants have already been released into ground water that has subsequently been contained within the SRS reservation. However, the stakes of any catastrophic contamination are literally life or death in Georgia. Our aquifer system is the life blood of southeast Georgia.

Consequently, if monitoring stations are not provided in Georgia in conformance with Georgia DNR proposals, Mr. Thomas will oppose funding for reactor restart or subsequent operations in any appropriations bill.

Finally, we all recognize that the price tag and timetable for cleaning up the residue of past waste disposal practices are extremely high. In July, the Energy Department said it would cost between \$66 billion and \$110 billion over 25 years. The General Accounting Office suggested that DOE had seriously underestimated the real cost. Some estimates run as high as \$155 billion over 25 years.

S-02-07.

But the simple truth is that we cannot afford not to pay the bill. And we certainly cannot afford to undertake any additional production activities without providing for a comprehensive clean up of the old activities. The Department has drafted a five year plan on clean up, and it is imperative that the plan be carried out.

Admiral Watkins and the Congress have said that they are serious about not repeating the mistakes of the past. Mr. Thomas believes it is time now for both parties to back up their words with action.

Thank you for your attention, and this concludes my statement on behalf of Mr. Thomas.

DOE agrees and is proceeding with the Waste Management and Environmental Restoration 5-Year Plan and other waste management activities. Please see the response to Comment S-02-02 on waste management and environmental restoration.

C-348

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-3	STATEMENT OF HELEN Y. HARRISON Hampton, SC 502 Holly Street W.	
	To quote the headline in the State today, "DOE: Need for weapons plant may out-weigh health risks." I am outraged. Are we who live down wind of the Savannah River Site being declared expendable?	
S-03-01	I further quote, "The Federal Energy Department has tentatively concluded that restarting all three nuclear reactors at the Savannah River Site is crucial to maintain national security, even though that action would bring further risk to human health and an already severely contaminated environment."and ten paragraphs on down the article, "The report acknowledges that following DOE's preferred option — starting all three reactors — would lead to additional ground water contamination from radioactive tritium and hazardous wastes, temporary wetlands loss, fish kills and loss of habitat for the wood stork, an endangered species. An additional risk is the likelihood that cancer rates for humans could increase in the	Section 4.1.2 of the EIS addresses the potential additional risk to human health resulting from the continued operation of K-, L-, and P-Reactors. Section 4.1.6 addresses cumulative impacts and health risks from SRS and nearby facilities. The health effects of past operations have been (and are being) evaluated by independent agencies, as described in Appendix B; no significant health impacts on the general public have been identified. Section 3.7 (Tables 3-13 and 3-14) and annual environmental monitoring reports issued by DOE describe the extent of contamination from prior SRS operations.
S-03-02	surrounding area. If no reactor is restarted, the report concedes, 'cancer fatality risks — would diminish.' The report also admits that 'the environmental consequences of terminated operation of one or two of the SRS reactors would result in an approximately proportionate reduction in the environmental consequences.' The Savannah River Site is widely viewed as the most contaminated location in South Carolina, and critics frequently refer to the 300 square mile facility as a 'national sacrifice zone.' In other words, it is just tough if a person is so unfortunate as to live here. I live in Hampton, S.C. I believe that God gave each person, animal, bird, etc an allotted number of days to live on this planet. Who is the DOE to decide whose days will be cut short, who are they to decide whose child might be born misfigured and grotesque, who are they to decide who may never be born because his/her parents were rendered sterile because of radiation from the SRS. I wonder if God may not hold someone responsible for this outrage. I assume that the Department of Energy looks upon us as	The environmental impacts of continued operation of K-, L-, and P-Reactors and the alternatives at SRS, are fully addressed, analyzed, and bounded in Section 4.1 of this EIS; this includes the resumption of production after an extended outage.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-03-03	they did in the 1950s during the atomic tests in the Pacific. The bugs, rodents, and poor animals taken to the islands or floating on deserted ships were mere expendable experimental creatures just like we here today are. I can see no sensible reason for more tritium and plutonium. We have just sat at the peace table with other nations. We have seen the crumble of the Berlin Wall. We have seen democracy rise up in Eastern Europe. We have even heard that the Russians say the disaster at Chernobyl is greater than they ever suspected. More people are ill, more people are dying, and they are being moved farther and farther away. Why can't our government do this for those of us here in order to prevent such a disaster right here? Why??? It is ironic when I think of our country sitting down at the peace table with other nations. Yes, the U.S. delegates are facing the others, but their hands are hidden behind their backs as they quickly produce more tritium and plutonium. I wonder how any nation can really trust us as we blather on about how thrilled we are with the prospects for peace as we hurriedly build more bombs to maintain national security. I say, "Hogwash!" It is also ironical at the brilliance of the DOE and their claims of great need for more and more tritium. If they are so smart, why put all their eggs in one basket? We have, according to their words, only one place in the United States which produces tritium. THE SAVANNAH RIVER SITE! I shudder as I think that one wild eyed nut or one dedicated terrorist could simply load one bomb in a plane, fly over the SRS, and dive in. They would destroy the entire supply of tritium in the USA, destroy the facilities for making more tritium and destroy the entire states of South Carolina and Georgia in one stroke!	The Department of Energy produces tritium (and other nuclear materials) as directed by the Nuclear Weapons Stockpile Memorandum (NWSM), which determines the need for defense materials, and which is approved by the President. The most recent NWSM, approved by President Bush on July 12, 1990, was used in calculating the demand for new production of tritium in Appendix A. In addition, Appendix A considers a potential reduced-need scenario for tritium.
S-03-04	I have read that there is great concern in the DOE for ALL the jobs which would be lost at the SRS. I wonder if these employees are enlightened as to the danger to their health while they labor at the Savannah River Site? Are those employees warned of the dangers to their health and the health of their families if the K, P, and L reactors are re-started? Are they given a chance to go elsewhere for employment if they are skeptical about their futures? Should they not be given this choice? Don't we live in America? Aren't all men created equal and have the right to expect equal rights and opportunity in our great nation? Don't they, too, have the right to live out their allotted number of days in health and happiness, and don't they, too have the right to healthy children. Should they not be given this choice?	Because detailed information on defense need involves national security information, nuclear material requirements and the production capabilities required to meet these demands are discussed in a classified appendix (Appendix A) of the EIS. This classified appendix was not distributed with the main document, but will be considered by DOE decisionmakers; it is available to those meeting security requirements. Unclassified information from Appendix A is included in Section 1.2 of the EIS. DOE is working with the Federal Aviation Administration on rulemaking for prohibited airspace over SRS and several other DOE sites. Federal regulations and DOE Orders require maintenance of adequate employee radiation safety indoctrination and education programs and exposure monitoring programs for all SRS employees and the surrounding environment. DOE requires that employees receive their exposure histories annually. (DOE, 1988a, "Radiation Protection for Occupational Workers," DOE Order 5400.11; OSHA, 29 CFR 1910.96 et seq; Radiation, Occupational Exposure).

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-03-05	As Hugo was approaching last summer I worried lest it go that way and cause a great disaster at SRS. Thank God, it missed the SRS. As you look around Charleston even today, think how things might have looked had Hugo struck the Savannah River Site. Disaster can come in more ways than just the dropping of a bomb. Disaster could be impending at this moment as we continue to pollute and contaminate our planet. Why do our people act as if we have another planet to flee to when we wear this one out? I implore upon you to call a halt to the needless restarting of the K, P, and L reactors or pass a bill to allow those of us who want to get out of here to be given just compensation for the properties we own which hold us financial hostages here!	Please see the response to Comment S-03-03 on need.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-4	STATEMENT OF CHERYL BRACKIN 6 Longview Bluff Drive Savannah, Georgia	
	I'm here to urge the DOE to keep the reactors shut down. How can you justify restart?	
S-04-01	Last year I left the environmental impact hearing feeling discouraged and depressed. Mine was only one voice. My friends and other citizens spoke convincingly and eloquently. You people see us as uninformed troublemakers. The government will tell us what is best for all of us. I may not be a scientist, but I know a dangerous and threatening situation when I see one. Don't tell me we need more nuclear weapons. We have <u>more</u> than enough. If we keep poisoning our earth, there won't be anything left to defend. And there won't be anyone here to use the weapons anyway. I'm tired of all the propaganda and lies. It's a sad note that our government deceives us and tries to tell us what is best <u>and</u> that they're going to do it anyway.	The need for nuclear weapons is beyond the scope of this EIS.
S-04-02	We must redirect our focus if this country, indeed this planet, is to survive. Shut down weapons production. Clean up these contaminated sites. Stop poisoning our water, air and soil. Continue to work on arms reduction. Our money needs to be spent on making life better for every citizen. Look at our poor educational systems. Look at the ever-increasing crime problems. Look at the health needs of our citizens. In my work with communication disorders I frequently see military dependents who cannot afford the speech therapy which has been recommended. The government does not cover the cost of such services. Instead, it builds nuclear weapons and wants to continue building more. What are we saying to these children? We must refocus our energy and our money before it is too late. I urge you not to restart those deadly reactors, which will further contaminate our environment and threaten this entire area. Choose life over the ever-present threat of illness and death represented by SRS.	Please see the response to Comment S-02-02 on waste management and environment restoration. The Administration is working on arms reduction.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-5	STATEMENT OF PAMELA BLOCKEY-O'BRIEN	
	Statement to the United States Department of Energy, May 31st, 1990, Concerning the Continued Operation of K, L, and P Reactors at the Savannah River Nuclear Site, Aiken, South Carolina, and the Draft Environmental Impact Statement Pertaining Thereto	
	By Pamela Blockey-O'Brien, member, International Fellowship of Reconciliation, on behalf of:	
	The International Fellowship of Reconciliation (I.F.O.R) National Clergy and Laity Concerned, Rev. Emory R. Searcy Jr., Executive Director. Atlanta Clergy and Laity Concerned	
	I am Pamela Blockey-O'Brien, member of the International Fellowship of Reconciliation, which was founded in Great Britain and is the world's oldest religious-pacifist organization. We work on human rights, nuclear disarmament, world hunger, environmental issues and issues of social and economic injustice worldwide. IFOR is a Non-Governmental Organization in consultative status with the United Nations on behalf of humanity. IFOR has had seven Nobel Peace Prize winners amongst members. I am also representing National Clergy and Laity Concerned and Atlanta Clergy and Laity Concerned. Clergy and Laity Concerned is composed of people of faith working for peace and justice and the betterment of the human condition.	
	To use a Quaker expression, I am here today to "speak truth to power". I am here with a great sense of sadness because the reason for the intended restart of these reactors is for the production of plutonium and tritium for the manufacture of nuclear armaments, which not only violate the Geneva Protocol of 1925 and violate the 1977 Geneva Protocol on Humanitarian Law applicable in armed conflict, nuclear weapons also violate international law, the Nuremberg Principles, the London Accords of 1945 and the Genocide Convention, Article 2, Section C in particular, as I have said at a previous hearing. Any nation manufacturing them not only violates human laws, but also the ethical and moral teachings set forth by all major world religions.	

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-05-01	I am also filled with a sense of hopelessness, as I know the Department of Energy will restart these reactors regardless. There's too much greed and money at stake not to - after all, the DOE is the world's largest research and development complex, government owned and contractor operated. Companies who contract with the DOE/Pentagon/DOB circuit make staggering amounts of money. That money rarely trickles down to the workforce, whose potential job loss the DOE pretends to worry about if the reactors don't restart. \$1 Billion in 1981 dollars spent on guided missile production equals 9,000 jobs, but spent on educational services creates 63,000 jobs or on air, water and solid waste pollution control, 16,500 jobs. The Defense Economic Adjustment Act (HR 101) would cover defense related employee layoff situations as the workforce at Savannah River Nuclear Site would face, guaranteeing temporary income maintenance and relocation allowances and occupational retraining of military industry employees. Why not support that?	No decision will be made on the alternatives in this Final EIS until at least 30 days after the Environmental Protection Agency's Notice of Availability is published in the Federal Register.
S-05-02	Now to the matter of the reactor restarts and the DEIS: It's bad enough that the Department of Energy is pushing dangerous, chromosome changing food irradiation, in an attempt to create extra demand for cesium-137 - which is a by-product of plutonium extraction and used for food irradiation - so more cesium will be needed than can be obtained from current military wastes, and congress may then allow the DOE to reprocess commercial spent fuel, in the name of helping the radiation technology industry, who would get their hoped for \$240 million a year plus profit, while the DOE extracts plutonium from commercial wastes for use in weapons - and you touch on this commercial aspect in a roundabout way on p. 2-66 and 1.1. And its even worse that the DOE along with the Nuclear Power Industry is waiting for the Nuclear Regulatory Commission (with help from E.P.A) to finish getting something called Below Regulatory Concern past an unsuspecting public and congress - Below Regulatory Concern being a plan to deregulate over 30% of this nations misnamed "low-level" radioactive wastes, many of which remain radioactive for thousands of years, so it can be poured in streams, down sewers and dumped in local landfills nationwide while the public is told its harmless, so the DOE gets to save part of the over \$100 Billion it faces in cleanup costs and the nuclear utilities save over \$620 million in theirs, while both DOE and the utilities create the worst long term health disaster in human	DOE is studying the Defense Conversion Adjustment Program under the recently passed FY 1991 Defense Appropriations Bill to determine its applicability to SRS, and other DOE, employees.
S-05-03		DOE is not proposing to operate the SRS reactors to make cesium.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	history. Even the nationwide "assumed" death rates for Below Regulatory Concern have been calculated, 1 in 10,000, this is premeditated murder, something the Department of Energy, the Nuclear Regulatory Commission and the nuclear utilities have long been guilty of under "ALARA", and now, the Department of Energy is at it again with this horrible, misleading Draft Environmental Impact Statement prepared by 7 people with DOE affiliation, 31 from NUS Corporation, and they've used approximately 133 DuPont and DOE related references, plus some from Westinghouse, the NRC and only a handful from other sources. So this is hardly an objective report. To confuse the US public and to make figures appear lower to them, the metric system has been used, and you even "re-explain" words in common usage, such as "severe accident", as DOE's idea of a severe accident differs from most people's. Let's look at safety, security and accidents first:	
C-355	S-05-04 P. 4-101 says no Savannah River traffic would have an effect on safety of Savannah River Nuclear Site Reactors. How about a terrorist with a hand-held rocket launcher on a passing chartered boat? P. 4-100 shows approximately 4,000 flights a year over the site since air space restriction was lifted in 1976. All you need is one chartered plane, one terrorist willing to die for a cause and one suitcase sized one megaton nuclear bomb and you can kiss two states goodbye. I suggest you shut down that airspace <u>now</u>.	The aircraft overflights and Savannah River traffic referred to in Chapter 4 of the EIS are normal, expected occurrences and do not include deliberate acts of terrorism. Section 2.1.5 discusses safeguards and security. In addition, DOE is working with the Federal Aviation Administration on rulemaking for prohibited airspace over SRS and several other DOE sites.
S-05-05	Heavy water is used as a neutron moderator and recirculating primary coolant. Ever heard of the "cod liver oil factor"? During World War II, even British Intelligence intended to sabotage heavy water produced at Norsk HydroElectric if it fell into German hands by a cupful of cod liver oil, to render the heavy water useless as a moderator. Though it's a matter of public record if you know where to look, I don't intend to publicize the exact method one needs to employ to every mentally deranged person between here and the Middle East.	The details of site security measures taken to protect against threats to nuclear facilities are beyond the scope of this EIS.
S-05-06	On P. 4-71/72 it goes into how severe accident risks are evaluated. We get three paragraphs of double-speak on an accident characterization and three phases of Probabilistic Risk Assessments which read like a bad joke. You DON'T 'estimate the frequencies of various "incidents" and expected frequencies of releases of	The analyses of both design-basis and severe accidents, including the most current information available on the probabilistic risk assessment for

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-05-07	radioactivity that could set off an accident and combine those estimates with probabilities of failures of accident prevention systems and project from that bunch of horsefeathers a "probabilistic risk assessment" - you should ask the one question that is nowhere of be found in this entire document, - ask: <u>"What happens if the whole darn thing blows skyhigh and there's total meltdown?"</u> But no, most of your little charts and pages of consequence assessments deal with 2 hour exposures and between 1% and 3% of core damage - the same as 0.0246% release of core damaged. Then, to add insult to injury DOE implies the consequences will be negligible and the public has no need to worry. Well, let's see about that. Since you are using 2% to 3% releases, let us compare one Savannah River Site reactor with Chernobyl. Chernobyl had a MINOR accident in nuclear terms. Chernobyl had a 3 to 4% release and no meltdown, only partial. Chernobyl had a containment dome, Savannah River Site reactors do not... At Chernobyl, a one thousand ton steel cover plate was lifted off the reactor and blown to smithereens, the fire raged 10 days, the radioactive cloud at first stretched from Krawow to Kiev, 500 odd miles, then dumped heavily across 20 countries and then went round the world. Around Chernobyl at the present, one thousand square miles are so contaminated they are unfit for any habitation forever, and over 4 million people in Ukraine, Byelorussia and Western Russia live on contaminated land. U.S. doctors had predicted between 15,000 and 135,000 extra cancer cases, well, there are already an estimated 35,000 to 160,000 CHILDREN with cancer and roughly 1.6 million people already suffering results of high radiation. Have you told the people of Georgia and South Carolina what that means to them? No. So I have a chart here I made, nothing fancy, not the high tech computer stuff you're used to, but made with considerable care, love and concern for the people of both states and the workers on the Savannah River Site. The chart compares the needed, immediate evacuation area around Savannah River Site, based on a variety of factors from Chernobyl and other sources, such as child exposure, wind directions etc. You actually get an almost immediate rough tear-drop shaped area that has the most severe contamination, i.e., the area round the side and the major plume area. You say you incorporated information from Chernobyl into evacuation plans. I say there's no way that you did. Your	these reactors, are presented in Section 4.1.3 of the EIS. The information in the EIS on accident risks is consistent with the current state of the art for probabilistic risk assessments, and the best estimate available at the present time. The severe accident risk assessment assumes a 100-percent core melt. DOE does not imply that the consequences of a severe accident are negligible, but rather that the risk to the general public is low. The accident at the Chernobyl Station involved an explosive destruction of the reactor core followed by combustion of the graphite moderator. The nuclear physics of the SRS reactors do not permit the explosive self-destruct mechanism; also, the SRS reactors are moderated with heavy water, which does not burn. The Chernobyl reactor type is built without a containment dome and essentially all of the core fission products were available for release. The lack of containment domes at SRS and Chernobyl reactors does not imply an equal potential for accidents. Releases from SRS reactors from design-basis and severe accidents are presented in Section 4.1.3.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-05-08	evacuation only goes 10 miles from the site according to what you say on p.3-61. You'd need to evacuate everyone <u>immediately</u> in a 30 mile radius of the Site boundary and a swath 60 miles wide and 60 miles long along the plume wind direction path added to that - a total of 90 miles. All pregnant women and children under 16 and the elderly to be taken an extra 10 miles to a total of 100 miles minimum. Everybody out, not to return. If the plume headed for the coast and Savannah, the poor people would have to try and outswim it - even a Dunkirk type rescue wouldn't work, the entire Savannah River and South Carolina/Georgia coastal waters, air, soil will be contaminated. If the wind direction went upcoast, you're talking Charleston, North Carolina, Virginia, if its west, you're talking middle Georgia, Alabama. You couldn't do it and you know it. Have you told the Savannah River Site workers with such an accident they'll either die quickly or slowly from radiation sickness with its bloody diarrhea, vomiting, bleeding under the skin? You say in here you'll take people to Fort Gordon Eisenhower Army Medical Center just up the road - be serious. The whole of Fort Gordon will be running for its life. Hundreds of thousands of people will be involved, there will be chaos and panic, traffic accidents tying up rural roads, terrified families trying to reach relatives, the University of South Carolina system alone would have about 26,000 terrified young people trying to get out, in Georgia there's a college in Statesboro I believe. By the time it was all over even Donald Trump couldn't finance the sized morgue you'd need. On page 2-55, it says in case of major accident Savannah River Nuclear Site has emergency operations centers in the vicinity of the site and the technical support center is on the site. This is insane. Have you told those people far enough away who may stand a chance if they evacuate quickly, never to return, that no insurance policy in the world covers nuclear accident that I know of?	The emergency plans for SRS reactors identify evacuation and sheltering plans that match the appropriate range of potential accidents, as described in Section 3.9 of the EIS.
S-05-09	Further, concerning accidents - in another offsite evacuation plan calculated to other factors, p. 4-87, maximum evacuation is about 20 miles. The confinement of radioactivity depends on exhaust air filters, which in turn depend on a continuous flow of exhaust air, that in turn depends on the successful operation of the confinement heat removal system, but if the exhaust air exceeds 340°C, the activated carbon beds in the confinement filters will catch fire. Assuming all this depending on something else does work, but there is a fire/explosion, DOE intends to avert catastrophe by turning on a sprinkler system (see table 4-81) what happens if the sprinkler system doesn't work?	Systems important to the safety of reactor operation are designed with sufficient redundancy to ensure their functions can be performed in the event of an accident. The severe accident analysis presented in Section 4.1.3 of the EIS includes accident sequences in which the Airborne Activity Confinement System is assumed not to function, and describes their consequences.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-05-10	DOE is so determined to play down the plutonium-for-bomb-production factor the deadly plutonium issue is barely addressed, and in one of the places where it is, p. 4-72 concerning accidents being more likely to occur with a plutonium production charge than a tritium production charge - you say "negligible risk" accident initiators such as this, are NOT considered, as although the initiating event may be <u>more</u> probable than others, the quantity of radioactive materials released would be less. DOE knows very well it's not necessarily quantity - Plutonium in tiny amounts is far more deadly than tritium, tritium having a half-life of 12 years and plutonium-239 has a half-life of 24,000 years and full hazardous life of 240,000 years, its so deadly it was named after the mythological God of Hell and Lord of the Underworld (plouton). Then, on p 4-97 you finally come out and say, <u>in one line, that all your pages of severe accident analysis in this book are based on a tritium production charge</u> accident, though as we've seen the plutonium production charge accident is more likely, and the paragraph that follows, on plutonium, is not even worthy of comment.	The present requirements of the NWSM are for the production of tritium, not plutonium-239. However, plutonium is not volatile and would tend to remain in the reactor, reactor building, or filter system rather than disperse in the atmosphere. As a consequence, the contribution to the effective dose equivalent to a member of the public resulting from the quantities of plutonium postulated to be released in the design-basis accident is about 60 mrem, as listed in Section 4.1.3.1.4 of the EIS.
S-05-11	Pages 4-134 through 138 cover everything from containment domes, to internal containment structures, a detritiation system on to confinement improvements to elevated piping concepts under "mitigation measures". These fanciful ideas for improving safety show the LOUSY condition these reactors are really in, and show repairs would cost a minimum of \$1,575,000,000 BILLION dollars. The entire section on what needs to be done reminds me of a bunch of ten year olds trying to fix a broken kite for the hundredth time. No wonder you don't intend to do any of them. The safety improvements that you <u>do</u> intend to do, p. 2-15 through 2-20 and 2-24 read like a check-list by a farmer trying to fix his pre-World War II farm equipment and barn:	Please see response to Comment S-01-02 on safety.
S-05-12	Get someone to watch out for fires and add smoke alarms, check the welding, replace fan bearings and belt, replace the joints, get new pump motor starters, re-inforce the exhaust stack, and install all sorts of "state of the art" gadgets and lots of computers. State of the art, in the way the multi-million dollar Hubble space telescope antenna wouldn't work perhaps? As to computers, how many times have people heard the phrase "the computer is down?"	
	Speaking of things being down, we get to earthquakes. P.3-12/13. There are many earthquake faults under the site, one	Seismic upgrades responsive to the concerns of DNFSB, NAS/NAE, ACNFS, and individuals are being

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
C-359	directly under L-reactor. You don't even know how one of them, the Pen Branch fault, might move. The Pen Branch fault overlies the Dunbarton fault. DOE maintains the Pen Branch fault is "not considered capable". Under Nuclear Regulatory Commission reactor siting criteria, the NRC decided in its wisdom, that a fault is only considered capable of moving if, amongst other things, it has moved within the last 35,000 years or is related to another capable fault. I find it amazing that the Nuclear Regulatory Commission believes it understands the workings of the Universe to the point of being able to predict earthquakes, in particular that the DOE even listens, since you've had two recent earthquakes on site, one of them basically UNDER K-reactor which you wish to crank up again, which was felt 100 miles away. You say a recent report on that earthquake predicts a recurrence rate of 1 year for a magnitude 2.0 earthquake for the southeast coastal plain - of course it could turn out to be an 8.0 - but says historic data to calculate recurrence rates accurately are sparse. Perhaps you could ask the Nuclear Regulatory Commission again.... P. 2-10 says the reactors are being qualified to earthquake criteria that have been accepted by the Nuclear Regulatory Commission for commercial nuclear power plants licensed before 1974. God help us... DOE upgrading against earthquakes includes shoring up the reactor stack, fixing the control room ceiling so the tiles don't fall in the reactor and adding emergency lighting. I'm sure we'll all sleep better knowing that.	implemented at SRS reactors before the resumption of production, as described in Section 2.1.
S-05-13	Now all your five reactors not only sit on top of a bunch of earthquake faults and epicenters, with C-reactor full of cracks, they also sit on top of an approximately 300 foot deep series of layers of sand, sand and carbonates, silty sand and of thin clay layers that are locally waterbearing. Not a very solid foundation. Then comes a thin layer of clay no more than 10 feet thick at its thickest point, and under that - an aquifer. WATER. Then more clay. Then more aquifers divided with clay, the bottom one is the Milledorf - also known as the Tuscaloosa aquifer which crosses 4 states and supplies vital ground and drinking water. Solvents from the Savannah River Site have been found in it. There are 68 of your famous "seepage basins" on site. These are unlined holes in the ground. 31 are full of chemicals, 37 full of radioactive seepage such as Strontium-90 and Cesium 137, and 17 seep raw chemical waste. Strontium-90 migrating from F-area reprocessing seepage basins has reached concentrations in the near surface groundwater and in a creek 42,500 times greater than EPA drinking water	The Black Creek-Milledorf Formation in South Carolina, which was once known as the Tuscaloosa aquifer, discharges to the Savannah River in the vicinity of SRS, as described in Section 3.4.2 of the EIS. This aquifer is not believed to be hydraulically continuous with the formation of that name in Georgia. The toxic chemical contamination of that aquifer was caused by chlorinated hydrocarbons, which are confined within the SRS

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-05-14	standards. What do you think this does to migrating birds and wildlife who may stop for a drink? Let alone people downstream? The groundwater below M area seepage basin and above the Tuscaloosa is extremely contaminated with chlorinated hydrocarbons and moving towards Jackson, SC. This is all outrageous. Attempted cleanup, which I understand ejects the chlorinated hydrocarbons into the AIR, could take 40 years. On page 5-12, EPA has placed the entire Savannah River Nuclear site on the National Priorities list for cleanup and you have 5 Superfund sites. Over the years those who operated the site dumped uranium, industrial degreasers, acids, caustics and metals into streams on site, like Tims Branch to the north. DOE is negotiating settlement agreements so that means none of that will probably be cleaned up. Yet in this report, DOE and its report preparers have the unmitigated gall not to say one single thing about how the entire site has been polluted. There is not one line I could find saying you're allowed to average out radioactive contaminants to air, water, soil etc. over a year so they seem less. Not one line saying tritium was in the rain 45 times higher than background, or in vegetables off-site 70 times above background, in fish 46 times, and in water 46 times above background. Not one line that fish had cesium-137 levels 30 times background and river sediment five times background, or that fish eggs and larvae are contaminated or killed by radioactive muck all the time. Even the infamous Georgia Department of Natural Resources has a section that tries to do a good job, underfunded as it is and they too say the elevated cesium and tritium levels are due to Savannah River Site. The DOE? DuPont?	boundary, and are currently being removed by recovery wells and an air stripper. The Black Creek-Middendorf aquifer lies 400-900 feet below the surface of SRS and is generally protected by several impermeable clay or other lithologic formations. Monitoring wells have been installed in the aquifer to detect any type of contamination. Over the 35-year SRS operating period, no radioactive contamination has been detected offsite in the Black Creek-Middendorf aquifer as a result of past operations, and none is expected from continuing reactor operation. (Please see the EIS on Waste Management for Groundwater Protection, DOE/EIS-0120.)
S-05-15	Westinghouse clique is responsible for vegetation off site with 34,700 pci/kg of tritium in it, fish with 22,400 pci/kg tritium in it. Plutonium was dumped in cardboard boxes for over 30 years, and boiling radioactive water spewed into creeks and wetlands. Under NRC's "ALARA" which allows these reactors you wish to restart and every commercial reactor in the nation to only keep radioactive emissions "as low as reasonably achievable" depending on how much money contractors/DOE budget for safety, radioactive gunk has been released all over the place even though NRC and DOE and the nuclear industry knows people are getting ill and dying as a result. And you want to continue this? On P.5-12 Concerning air quality, all	For the past 40 years, national and international radiation safety organizations National Council on Radiation Protection and Measurement (NCRP&M) and International Council on Radiation Protection (ICRP) have recommended annual limits on exposure to workers and members of the public. These include limits on intake via air, food, and water (International Commission on Radiological Protection 1979, Limits for Intakes of Radionuclides by Workers, ICRP Publication 30, Pergamon Press), which lead to limits on annual average concentrations in environmental media. Concentrations in environmental media accessible to the public and the doses resulting from their intake are well below applicable standards, as described in Section 3.7 of the EIS.
		The monitored concentrations of tritium and other radionuclides in vegetation, milk, fish, and other environmental media are reported in annual environmental reports (e.g., <u>Savannah River Site Environmental Report for 1988</u> , WSRC-RP-89-59-1). These concentrations, by themselves, are meaningless without being converted into effective doses to people; maximum and average individual doses that might result from these concentrations are also presented in these reports. As indicated in Section 3.7.1, the maximum dose to a hypothetical individual

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	existing on-site facilities including reactors, are not required to comply with any standards of worth, so the Clean Air Act basically doesn't apply here. Under Air Pollution Control Regulations no National Emissions Standards for Hazardous Air Pollutants are required either as DOE points out the reactors were built before the regulations went into effect - how convenient.	remaining at the boundary 24 hours per day, 365 days per year, has been less than 0.6 mrem per year. An individual would receive an additional dose and radiation health risk six times as great (2.4 mrem per year) merely by moving from Savannah, Georgia (average altitude about 45 feet), to Charlotte, North Carolina (average altitude about 765 feet), from the increase in natural cosmic rays.
S-05-16	Furthermore, the DOE seems to have invented its own allowable population exposure rates by adding 200 mrem a year to background levels, saying it's from radon in homes. This is rubbish. Whilst radon is very dangerous and of great concern and should be checked (and if you can't afford to check it, open the windows and vent the basement to help get rid of it), federal and private surveys of over 5,000 Georgia homes indicated only 10 to 15% of them had serious radon levels. Even naturally occurring background radiation is dangerous. There is no safe level of radiation exposure contrary to popular belief. Across Georgia, background variation varies from an average of 40 m/rem year plus/minus 7, to 96 m/rem year plus/minus 11. There are a few areas of massive exceptions, such as the Dawson Forest Wildlife Management Area once the so-called Georgia Nuclear Aircraft Lab run by Lockheed who left old reactors and contaminated junk everywhere and its still glowing, or areas next to the reactor on the Georgia Tech campus, and a couple of beach areas. However, the lowest background radiation in Georgia is in the southeast and northwest. Total average naturally occurring background radiation levels in Georgia go up to about 106 mrem/year, and even if DOE adds figures for medical/consumer exposure etc, which it should not that would come up to 159 m/rem a year, not your big total of 361.2 in order to disguise SRS contamination within 50 miles. International, global background radiation averages are in the 100-125 m/rem year range. Besides, I doubt DOE measured radon levels in every house and apartment in an 80 km/50 mile radius of the site. Page 3-50 says Savannah River Site environmental radioactivity contributed 0.1 mrem year to the exposure in the 50 mile vicinity. That is untrue.	As noted and referenced in Section 3.7, the estimate of an average of 200 mrem per year from radon in U.S. homes was made by the National Council on Radiation Protection and Measurements.
S-05-17		The most recent estimate of worldwide exposure from natural radiation (in United Nations Scientific Committee on the Effects of Atomic Radiation, 1988) is 2.4 milliSieverts (240 mrem) per year, compared to the value of 296 mrem per year listed for the United States in Table 3-9.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-05-18	You expose people to average annual direct levels of 60 mrem a year plus/minus 9 mrem almost up to your 50 mile radius, and that DOESN'T include all the other contamination and exposure from all the other sources I mentioned earlier. The NRC/DOE use fictitious models of a human, usually an adult male superman type and computer models etc. on which to base exposure rates, they also do a lot of assuming, speculation and hypothetical situation models. In real life, small children are 40 times more at risk from any radiation exposure, and a woman's risk of developing cancer after exposure to radiation is twice that of a man, according to the National Academy of Science. But women and children don't count with the NRC and DOE nor do other life forms, like plants, animals, birds. A 1979 National Academy of Science report said virtually every type of cancer — blood, breast, lung, digestive system and others — can be initiated by radiation exposure, and heart disease, aplastic anemia, cataracts, shortened life-span and weakening of the immune response system has been linked to radiation exposure. Maybe the Surgeon General should go after the nuclear pushers for a change, but I suppose that might put the nuclear industry and nuclear military industrial complex out of business.... I digress — to continue: German studies say children are 10 times more sensitive to radiation, and the fetus 20 times more sensitive. In a Critical Analysis of the Official Regulatory Guides of the USA and West Germany, the Institut für Energie und Umweltforschung at Heidelberg shows something you never even consider, namely that radiation amounts from the transfer from soil to plants, plants to animal products and then from the gastro-intestinal tract into blood are substantially underestimated, in part because the chemical form of the radionuclides in the food chains are often neglected — such as Cobalt-60 bound in Vitamin B-12; and so that problems with Plutonium concern resorption rates of plutonium depending on its chemical form in the environment, as well as the changing oxidization state of plutonium under varying chemical conditions, so that, for example, plutonium contamination from reactors taken up by plants or in chlorinated boiling water for coffee or food can be up to 1,000 fold higher than calculated by official recommendations. Your report doesn't say much about plutonium exposure effects does it? Let alone stuff like this. But then, I knew it wouldn't. There is also nothing on the effects unto succeeding generations, although there is ample data on what happens in the way of genetic defects, and results from the Bikini atoll areas where women gave birth to what can kindly be classified as blobs of Jello. The Right-to-Life organizations may also be interested in spontaneous abortion rates and infant mortality near nuclear reactors.	DOE is unaware of any basis for a value of 60 millirem per year from SRS emissions; the comment might confuse monitoring data that report the <u>total</u> of the direct radiation exposures in milli Roentgen via TLDs from natural sources <u>and</u> the SRS contribution.
S-05-19	consider, namely that radiation amounts from the transfer from soil to plants, plants to animal products and then from the gastro-intestinal tract into blood are substantially underestimated, in part because the chemical form of the radionuclides in the food chains are often neglected — such as Cobalt-60 bound in Vitamin B-12; and so that problems with Plutonium concern resorption rates of plutonium depending on its chemical form in the environment, as well as the changing oxidization state of plutonium under varying chemical conditions, so that, for example, plutonium contamination from reactors taken up by plants or in chlorinated boiling water for coffee or food can be up to 1,000 fold higher than calculated by official recommendations. Your report doesn't say much about plutonium exposure effects does it? Let alone stuff like this. But then, I knew it wouldn't. There is also nothing on the effects unto succeeding generations, although there is ample data on what happens in the way of genetic defects, and results from the Bikini atoll areas where women gave birth to what can kindly be classified as blobs of Jello. The Right-to-Life organizations may also be interested in spontaneous abortion rates and infant mortality near nuclear reactors.	Dose models used in the EIS include the environmental transfer and dose parameters accepted by responsible scientific and regulatory agencies. Please see the response to Comment S-05-14.
S-05-20	consider, namely that radiation amounts from the transfer from soil to plants, plants to animal products and then from the gastro-intestinal tract into blood are substantially underestimated, in part because the chemical form of the radionuclides in the food chains are often neglected — such as Cobalt-60 bound in Vitamin B-12; and so that problems with Plutonium concern resorption rates of plutonium depending on its chemical form in the environment, as well as the changing oxidization state of plutonium under varying chemical conditions, so that, for example, plutonium contamination from reactors taken up by plants or in chlorinated boiling water for coffee or food can be up to 1,000 fold higher than calculated by official recommendations. Your report doesn't say much about plutonium exposure effects does it? Let alone stuff like this. But then, I knew it wouldn't. There is also nothing on the effects unto succeeding generations, although there is ample data on what happens in the way of genetic defects, and results from the Bikini atoll areas where women gave birth to what can kindly be classified as blobs of Jello. The Right-to-Life organizations may also be interested in spontaneous abortion rates and infant mortality near nuclear reactors.	Section 4.1.6.4.14 of the EIS discusses cumulative health effects.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-05-21	But let's get back to K, L, and P reactors. Groundwater contamination at their sites includes lead, trichloroethylene, mercury, acids and benzene. Now to add to all the contamination and problems I have listed, not only do you want to restart these reactors, this report says you are going to build a huge incinerator on site, the Consolidated Incineration Facility, to burn hazardous, mixed and low-level radioactive wastes, that will pour everything from dioxins on down into the environment. Plus, you'll build a Defense Waste Processing facility for high level radioactive waste, plus you're going to dump 30,000 curies of tritium a year into Upper Three Runs Creek, you're also building a saltstone disposal facility, a new low-level radioactive waste dump/storage facility and a hazardous waste dump. For crying out loud, according to your own figures in here, you've already GOT 33,817,600 gallons (I converted it) of high level liquid radioactive waste in storage (p. 3-59) plus 18,347,000 cubic feet of low level solid radioactive waste in storage you don't know what to do with nor how to render harmless, and with restart you're going to generate over a million cubic feet more of low level rad-waste and 39,900 cubic tons of deadly transuranic waste to name but a few things. With restart, the reactors are going to need to withdraw 10,303,800 gallons of water <u>a day</u> out of the aquifers, and the new things you're building are going to use groundwater at a rate of 3,963,000 gallons a day — but Lo and Behold — the Department of Energy doesn't consider these flow rates to create major problems or impacts on off-site groundwater users. That's a total of almost 585 million gallons a year and we've got global weather changes, like droughts, global warming etc. staring us in the face. The combination of these factors could have ghastly reactor consequences in terms of accident. Historically, in this area, even there have been some terrible droughts. You say you need a water flow of 138 cubic meters a second to keep the reactors going. That's 4,872 cubic feet a second, and keeping fish and wildlife going requires 4884 cubic feet a second and that these flows must be out of Augusta. Well I've got news for you, even without global warming to deal with, during the 1939 drought, the minimum flow out of Augusta was 648 cubic feet a second, almost 4,000 cubic feet per second lower. If that happened once, it can happen again. While I'm on the subject of weather, p. 4-99, the maximum historic flood for Savannah River is <u>not</u> 36 meters — or 118 feet, its 148.36 feet and that was in 1929, and in 1798 it reached 142.06 ft, both at Augusta. The 1929 figure is even above your calculated flood stage for the "domino" failure of upriver dams by about 5 feet. You could definitely have	The Consolidated Incineration Facility will be the subject of an Environmental Assessment. The Defense Waste Processing Facility and its associated waste management options were examined in an earlier EIS (DOE/EIS-0082) and an Environmental Assessment (DOE/EA-0179). Section 3.8 of the EIS discusses other waste management facilities and waste treatment methodologies. Also, please see the response to Comment S-02-02 on waste management and environmental restoration.
S-05-22	DOE withdraws about 28 cubic meters (988 cfs) per second from the Savannah River for three-reactor and D-Area powerhouse cooling and returns 90 percent of that discharge to the river. Multipurpose reservoirs operating since 1953, 1961, and 1983 have prevented severe flooding recently, and maintained flows during a recent 3-year drought. The 138-cubic-meter-per-second flow is necessary to maintain river water levels at pump intake elevations. Please see Section 3.4.1.4 of the EIS.	
S-05-23	The maximum flood at SRS was 118 feet (MSL); at Augusta, where the river elevation is 20 to 30 feet higher than at SRS, the flood stage was 148 feet (MSL).	

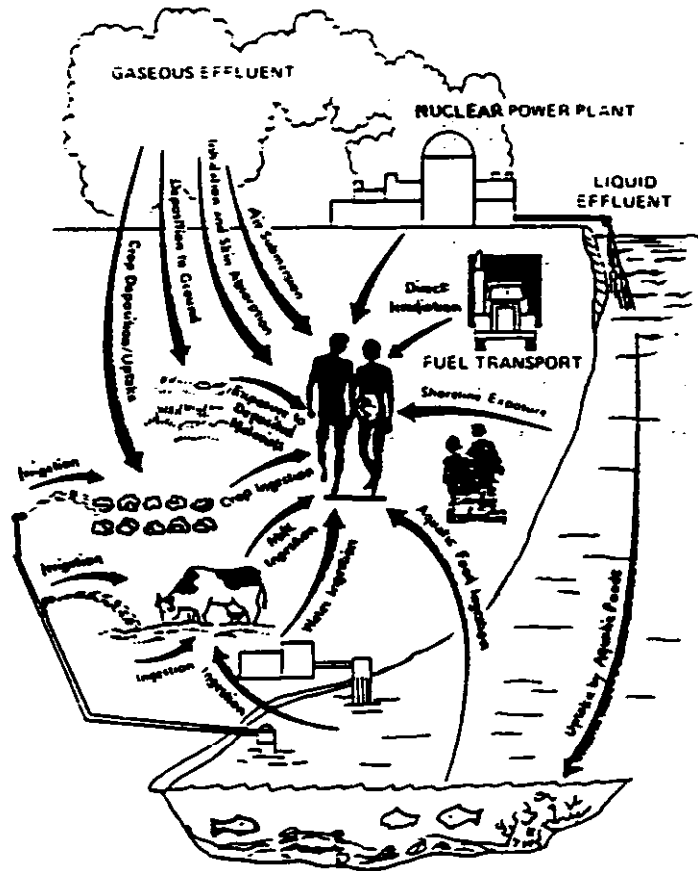
Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-05-24	flooded supply pumps and be in serious trouble not only with the reactors, but all the other groundwater contamination would be moved rapidly towards populated areas I would imagine. Last, but not least, I have a comment on the Nuclear Weapons Stockpile Memorandum, p. 1-2, which is a document that establishes production levels and retirement of nuclear weapons, which the President approves. DOE is the party responsible for developing and maintaining a capability to produce the nuclear materials etc. The Department of Energy and of Defense lay out what they say they need, it appears, then its sent via the National Security Council to the President for approval. The Department of Energy could theoretically say anything it liked in the Nuclear Weapons Stockpile Memorandum. The current Memorandum was approved by Reagan on January 19th, 1989, just before his leaving office and authorizes weapons building through FY 1994. It is highly unlikely that Reagan even read it, and even if he did, even more unlikely that he could have understood it. Since it is equally unlikely that the Department of Energy tells the President that they've contaminated everything in sight, and intend to restart a bunch of aged, decrepit reactors on top of earthquake faults, and that besides killing people under "ALARA", you're going to continue to kill them every which way you can or make them ill, I took the liberty of sending President Bush this testimony and asking him to stop this terrible state of affairs. When I consider what the Department of Energy has done over the years, and what its contractors, like DuPont, have done at the Savannah River Nuclear Site I am reminded of the vision of St. John, who said: "And I looked, and behold a pale horse, and his name that sat on him was Death, and Hell followed with him." If the Savannah River Nuclear Site reactors are not all shut down and the site cleaned up, - if DOE persists in restarting K, L, and P reactors, one of these days the people will look up and see Death coming at them, with Hell right behind. Remember the words of the 15th Century Hindu religious reformer from India, Tulsidas, who said: "This and this alone is true religion - to serve thy brethren. This is sin above all other sin, to harm thy brethren." Stop harming your brethren. Stop this restart. Thank you.	Please see the response to Comment S-03-03 on the need for nuclear materials and the NWSM.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
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Pathways of Radiation to Man

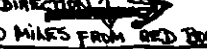


*This schematic figure is from NRC (Nureg-0139) and EPA documents. However, the children and the fetus have been added, since the NRC and the EPA consider only non-smoking adults. The children are about ten times more sensitive to radiation than the adults and the fetus about 20 times more sensitive. The children were taken from a photograph by W. Eugene Smith. (CJJ)

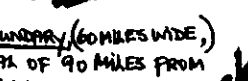
SAVANNAH RIVER NUCLEAR SITE / CHERNOBYL COMPARISON:
A MINOR ACCIDENT - 1 REACTOR - ONLY 3% TO 4% OF CORE RELEASED
APPROX. 1,000 SQUARE MILE AREA OUTSIDE SITE
BOUNDARY CONTAMINATED FOREVER, AND UNINHABITABLE 
AS AT CHERNOBYL. THIS AREA REQUIRES IMMEDIATE
EVACUATION.

PLUS EVACUATE
AN EXTRA 60 MILES
FROM RED BOUNDARY
TO A WIDTH
60 MILES
WIDE IN THE
DIRECTION OF
PREVAILING
WINDS AT TIME
OF ACCIDENT.



in
WIND DIRECTION 

AND 60 MILES FROM RED BOUNDARY (60 MILES WIDE),
EVACUATE AT ONCE, A TOTAL OF 90 MILES FROM
S.R.S. SITE BOUNDARY. THIS IS THE
MINIMUM IMMEDIATE EVACUATION
AREA. CHILDREN UNDER 16 SHOULD
BE EVACUATED 100 MILES MINIMUM
FROM S.R.S. BOUNDARY OF PREVAILING
WIND DIRECTION. E.G. IF WIND IS FROM N.E., CHILDREN TO BE
EVACUATED 100 MILES OUT FROM S.W. SITE
BOUNDARY IN AN AREA 60 MILES WIDE. ADJUTS 90 MILES FROM S.R.S. SITE BOUNDARY.
PREGNANT WOMEN TO BE INCLUDED IN CHILD EVACUATION DISTANCE.



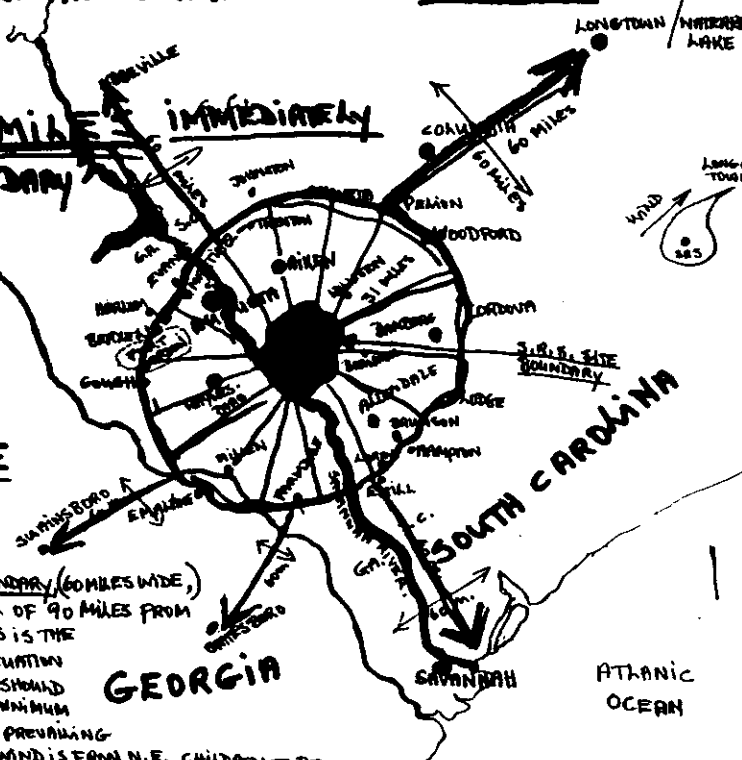


Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response

Tuscaloosa Group Formation

Shaded area indicates location of Tuscaloosa Group Formation. (East of central Georgia, the formation is known as Milledorf.)

Dashes enclose area where there are outcrops from the Tuscaloosa aquifer. (The aquifer does not outcrop on the Savannah River Plant.)

Source: Department of Energy.

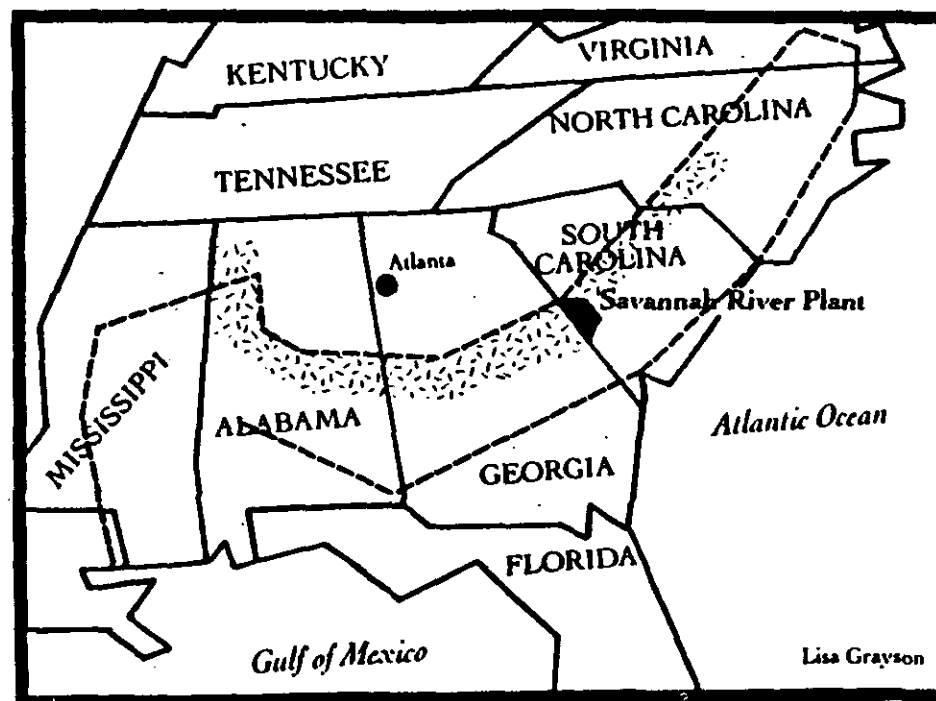


Table C-6. Public Comments and DOE Responses

Comment
Number

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Response

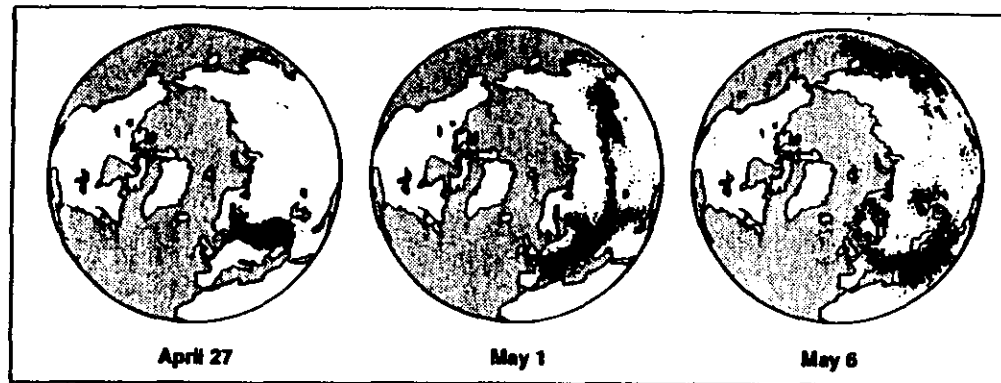
From Chernobyl To Atlanta... Radiation in the Wind

The first news of the Chernobyl nuclear disaster in the Soviet Ukraine did not reach the West by wire service or television. It arrived on the wind.

The fire at Unit No. 4 of the Chernobyl nuclear power station was 2 days old on the morning of April 28, 1986, when radiation monitors on Sweden's Baltic coast—800 miles downwind—recorded a sharp rise in radioactivity. Soviet television didn't report the first details of the accident until that evening.

Although some of the radioactivity is believed to have been dispersed by an initial explosion and fire, Dr. Marvin H. Dickerson, who coordinated tracking of Chernobyl radiation for the Lawrence Livermore National Laboratory in Livermore, Calif., says its spread appears to have been aided by thunderstorms in the area the night of the accident—and by a frontal system between the Ukraine and Scandinavia.

Whatever the reason, within two weeks fallout from Chernobyl had spread

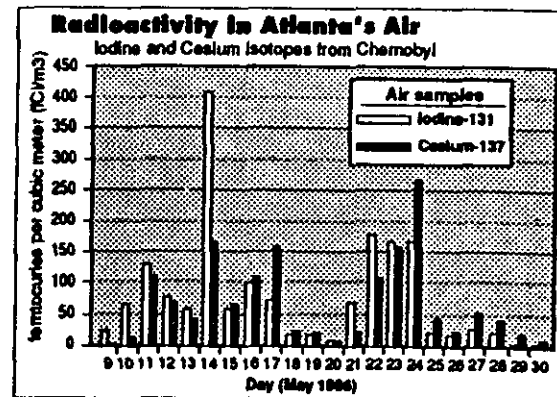


throughout most of the Northern Hemisphere.

By May 9, particles of radioactive cesium, iodine and ruthenium from the accident reached Atlanta—more than 10,000 miles downwind.

Although the fallout posed no immediate threat to public health, airborne radioactivity in the Atlanta area remained high for more than a month—twice reaching concentrations 400 times higher than normal. For six weeks, traces of Chernobyl's fallout lingered in Georgia's rain, vegetation and milk.

—Mike Toner



Source: Lawrence Livermore National Laboratory, Georgia Environmental Protection Division

DAVID WINK/Gaff

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-6	STATEMENT OF DEAN MOSS General Manager, Beaufort Jasper Water and Sewer Authority Beaufort, South Carolina MR. MOSS: My name is Dean Moss. I am the General Manager of the Beaufort Jasper Water and Sewer Authority in Beaufort, South Carolina. We are the principal water supplier for Beaufort and Jasper County. We are one of those statistics in your report in terms of exposure. We serve about 50,000 people now out of the Savannah River; we're projecting at least 100,000 people in the future. At this point, the river, in our opinion, constitutes the main reliable future supply for drinking water in Beaufort and Jasper Counties, South Carolina and in all probability, Chatham County, Georgia. The groundwater resource under Savannah and coastal South Carolina is being depleted and the river constitutes, in our opinion, the long-term safe supply. When we reviewed this EIS, we reviewed it with respect to the questions that we submitted to you in the scoping hearings that we needed answered and the information we wanted. We will present a written statement for the record, not at this time but before the end of the comment period. Our comments focus on the water quality impacts of the Savannah River. We are not expert in nuclear energy, we are not expert in the need for this particular reactor and we have therefore limited our comments to the things which we feel competent in addressing.	
S-06-01	In general, in our review of the scoping issues which we requested that you investigate, we asked you to look at the health effects of long-term exposure to low-level radiation. We felt the EIS should address this issue and make specific proposals on reduction and minimization of low-level radiation exposure, including low-level radiological releases to the Savannah River as a result of the reactor operation.	An examination of the health effects of long-term exposure to low-level radiation is beyond the scope of this EIS. However, this subject has been under continuing review by the National Academy of Sciences/National Research Council and by other competent national and international agencies and organizations. BEIR III and BEIR V (Committee on the Biological Effects of Ionizing Radiation), 1980 and 1990, <u>The Effect on Population of Exposure to Low Levels of Ionizing Radiation</u> (please see the response to Comment S-05-13 on radiation safety organizations and exposure limits). The results of the independent assessments of such effects are

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-06-02	I would point out that the EIS essentially does not question nor does it really address the issue of low-level radiation exposure and in fact,	discussed and used in the health risk assessments presented in Chapter 4 of this EIS. The EIS addresses the issue of low-level radiation exposure in several sections: Section 3.7.1 describes the radiation environment in the SRS vicinity and the minute contribution made by SRS to that environment; Section 4.1.2 describes the expected minor radiological impacts of reactor operation, including the dose commitments to individuals and nearby and downstream population groups and the consequent calculated health effects; Section 4.1.6 presents the cumulative radiological impacts of all facilities on and adjacent to the SRS; and Appendix B describes the monitoring programs for low-level radiation in the environment, and epidemiological studies on the risks from SRS operations. Also, please see the responses to Comments S-03-01 and S-03-02 on health risks and environmental impacts.
S-06-03	if I interpret the EIS correctly, it anticipates an increase in the level of radioactive discharge to the Savannah River, not a decrease. We asked for consideration of the factors relative to the low flow in the Savannah River. As you are aware, in '86 and '87 we had a fairly severe drought and the discharge from Thurmond was reduced to 3600 CFS, which is substantially below normal flow. We wanted the report to deal with the issue of impacts under these low flow conditions, which it did.	The only changes being evaluated in liquid discharges to the Savannah River would result from the discharge of disassembly-basin purge water to approved NPDES outfalls rather than the current use of the seepage basins for such discharges, and from the replacement of the F- and H-Area seepage basins by the Effluent Treatment Facility, which discharges tritiated water to surface streams, as described in Sections 2.1.2, 3.7.1, and 4.1.2. The decay period afforded by the underground transit time to onsite streams with seepage basins will decrease the quantities of tritium reaching the Savannah River. The maximum individual dose from either approach is a small fraction of the appropriate drinking-water standard (40 CFR 141.16).
S-06-04	We have asked also for your analysis of the impacts of restarting based upon the fact that the reactors have been essentially dead for about a year and whether there would be any significant impact from the restart and the flushing actions which would take place from the discharge into the streams. I don't think the report dealt with that terribly well.	Section 4.1.2.4 of the EIS describes the small quantities of cesium-137 flushed into the Savannah River by the cooling water discharged from each of the reactors.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	Specifically, however, in general, the report appears well organized and its appears comprehensive. Again, we're not expert enough to comment on all the issues. The data and the analyses appear generally complete and are presented in a reasonably straightforward manner.	
S-06-05	There are, however, certain pieces of information which we feel should be presented in the Environmental Impact Statement. For example, what is the change in the level of tritium in the Savannah River from above the plant to below the plant? Data in our files which is collected by the DOE, by Du Pont, by Westinghouse indicates roughly a tenfold increase under normal conditions from the Augusta sampling station to the sampling station at our water intake. I think this should be shown and discussed.	DOE has added the requested information on tritium concentrations to Section 3.7.1.2 (Table 3-11).
S-06-06	Secondly, what technology and costs — and we feel this is very important — what's involved in taking that tritium out of the waste stream? We're a downstream water user. We understand that your discharges meet the current EPA standards, that you are operating under EPA permits for discharge and that with respect to your assessment of the risk of these discharges, your feeling is that there is no risk or an insignificant risk.	Section 4.5.3 of the EIS describes the process considered for detritiation of the heavy-water coolant/moderator, which is the source of the reactor-origin tritium discharges, their estimated costs, and the dose-reduction benefits. As that section indicates, the cost per unit collective dose (and health risk) averted greatly exceeds the guidelines used by NRC to judge the need for reductions in effluents from commercial powerplants (10 CFR 50, Appendix I; NUREG 1.110).
S-06-07	My customers, and I speak on behalf of the water consumers in Beaufort and Jasper Counties, many of them are obviously not satisfied with that conclusion. Their perception is there is a risk. I think it would be very, very helpful and important if the EIS would present a discussion of the technology available, I believe certain types of membrane technology is now available for treatment, and the cost of running those discharges through a treatment system prior to discharge either to the ponds or to the river. In general, I think the EIS has got to face the issue fairly squarely and that is that it sits astride the main water source for southern Georgia and South Carolina. It's the only long-term renewable supply. Growth in these areas, Savannah, Beaufort, Hilton Head, is predicted, it's encouraged. It's one of the fastest growing areas in the United States. As the drinking water supplier	The calculated risk from drinking water taken from the Savannah River without tritium removal is an additional 0.0038 fatal cancer per year (or one additional cancer fatality every 260 years) in the water-using population of 317,000 to be served in the future in Port Wentworth and Beaufort-Jasper. (Please see EIS Sections 3.4.1.4 and 3.7.1.2.) An average U.S. population of this size would be expected to have about 600 cancer deaths each year from all causes.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-06-08	for that area, our desire is clearly to have no contamination of that river. Our customers' desire is the same.	
	We acknowledge that given past actions at the site, this may not be possible. However, we do feel the EIS should discuss the technology and the costs involved and the cleanup of the tritium discharges. The EIS states that the level of contamination in the river is so small that no health impacts are effectively measurable. The contamination of the river is below current Federal standards. I can't judge that you are in fact in compliance, but I do know that from above the plant to below the plant we get a tenfold increase in tritium concentration in the river.	
	We do know, however, that the technology is available to treat this discharge and we would very much like the EIS to consider the implementation of that technology, weigh the costs versus the benefits.	
	Again and in closing, DOE should carefully consider the long-term impacts, particularly on the drinking water supply, from the continued operation of the facility under the scenario envisioned in this EIS. And I think the EIS and the DOE should carefully consider the feasibility of implementing treatment to remove tritium from the river.	Please see the response to Comment S-06-06.
	Thank you very much.	

C-372

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-7	STATEMENT OF LEE ALEXANDER	
	MS. ALEXANDER: My name is Lee Alexander. My address is 26 East 64th Street in Savannah. It's a very quiet little street and a lot of people my age live on it and a lot of younger people than I live on it. They are very busily engaged in bringing up families for whom they have, like all parents, the highest hopes. None of us sleep very well at night these days. I do not speak for any organization. I hope and I believe that I speak for a large — unofficially, of course — a large segment of the Savannah population. We feel uninformed, we feel inarticulate, we feel shy about being here. I guess I just felt a little less so than all of the others and felt that perhaps I could speak in their behalf because I know how numerous they are. For reasons good or bad, most of them are not here and will not be here today.	
S-07-01	We would like to say with every emphasis that it's possible to bring to the statement that we do not want the reactors to be restarted. The first and most tangible reason is that because they were built so early on in the manufacture and the construction of nuclear manufacturing agencies they do not have even the basic safeguards that are considered just routine in plants that are now being established. But even if they could be added and by some miracle it could be ensured that there could be no catastrophe in the operation of the plants, we are only halfway to safety.	Please see the response to Comment S-01-02 on safety.
S-07-02	It's impossible to operate, as I understand it, a nuclear manufacturing plant without putting or creating an entire level of radioactive contamination in the groundwater, from the groundwater into streams and from streams down the Savannah River. Our local water supply system, of course, with some treatment comes directly from that river into every cup of coffee we drink and every glass of tea and every glass of cool water we give our children and our grandchildren, we are absorbing radiation.	As indicated in Section 4.1.2 of the EIS, the concentrations of radionuclides in the Savannah River from DOE operations are small fractions of the EPA drinking-water standards.
S-07-03	The statistics I believe indicate that the possibility for the increase in adult cancer is about four times over what it would be if these reactors were not restarted, and this prevails through an approximately 40-mile radius. We have all read in the newspapers	Please see the response to Comment S-03-01 on health risks.

Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response

and in environmental publications that the incidents of juvenile leukemia is increasing at a nightmarish proportion.

It is simply not possible, I think, to produce a nuclear product without producing nuclear wastes. Those wastes must be disposed of somehow. Most of the solutions that I am aware of at the very best simply take a little edge off the danger, perhaps postpone it a bit. If they are buried in the earth, they eventually seep into the soils, from the soil into the grass, from the grass into animals and into milk and from there into us. If they are buried at sea, the radiation enters the seafood chain and ultimately finds its way into our bodies and those of other animals, of course.

I think that we have created a monster. I don't know what the answer is to it, but I am convinced that to add to the growth of this monster is not any solution and not any way to protect our children now or in the future.

Thank you.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-8	STATEMENT OF ROBERT RANDALL From Trident to Life Campaign and Glenn Environmental Coalition, Glenn County MR. RANDALL: Thank you. My name is Robert Randall. I'm from Brunswick, Georgia. I'm here speaking on behalf of the From Trident to Life Campaign and the 150 people who make up the newly formed Glenn Environmental Coalition in Glenn County. Before I actually get into my testimony I would like to request of you if you have not already done so if you wouldn't mind restoring to those people who yielded their five minutes to Ms. Blockey-O'Brien their five minutes back again. I understand the comments you made at the beginning of coming back, but of course we didn't have those before and you can well imagine that doing the kind of thorough job that Ms. Blockey-O'Brien did on this 400 page document, I think you understand that could hardly be done in five minutes and I believe we're all better off for having heard what she had to say. I am not going to go into as much detail as did Ms. Blockey-O'Brien, but even I am able to see some of the basic faults in this Draft Environmental Impact Statement and I just wanted to mention some.	
S-08-01	The very fact that this Environmental Impact Statement talks over and over about continuation of the operations of these reactors rather than their restart tells us right off that the whole thing is grounded in fallacy and fantasy. We know that we're really talking here about restart. We're really not talking about a no action option; we're talking about an action option. The Environmental Impact Statement admits that it uses lower risk figures than those that have most recently been set and some people would hold that the risk figures that this Environmental Impact Statement uses are actually much greater. We're all aware that this is a matter of debate among scientists and when we're talking about this kind of thing, it seems to me that it would be best to err on the side of the maximum possible risk rather than to err on the side of the risk being less than it really is.	The CEQ has stated that there are two distinct interpretations of "no action." One involves situations in which there is an ongoing program initiated under existing legislation and regulations. In these cases, "no action" is "no change" from current management direction. "Therefore, the 'no action' alternative may be thought of in terms of continuing with the present course of action until that action is changed" ("Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, 46 FR 18027"). Because extended outages for modifications are part of reactor operation (and recognized as such by the NRC for its licensees), the resumption of production following such an outage is also part of the continuing operation of the reactors.

C-375

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-08-02	I am amazed that this document talks about health effects only in terms of fatal cancers caused by radiation. What about non-fatal cancers and other radiation induced health effects and what about non-radiologically induced health effects from other toxics? There's nothing here about genetic damage, birth defects, non-fatal diseases. It's as if the only health effect is the number of people that are actually going to die from it and that's just silly. Perhaps the worst thing about the Draft EIS is that it does not give us any way to evaluate the even understated, and grossly understated as we've already heard, environmental impacts against the supposed need for this action because Appendix A is classified. How can we judge?	Health effects from radiation are characterized as "somatic" (affecting the exposed individuals) and "genetic" (affecting the descendants of the exposed individuals). Both scientific and regulatory organizations have stated that the greatest risk from radiation is the increased mortality from cancer; thus, if the somatic risks from cancer are minimal, genetic risks are even less. The calculated cancer risk estimates used in this EIS are based on the EPA health risk estimator, which is consistent with the cancer mortality risks developed by BEIR V based on epidemiological data. Please see the response to Comment S-06-01 on health effects.
S-08-03	We're just asked to trust people who are very pro-nuclear and pro-nuclear weapons that this need exists. And then we're asked to accept whatever the environmental impact might be to meet the need. There's no chance here for public debate about it. There's no chance here to weigh whether or not the environmental impact, even an understated one, is worth risking in light of the need which is just given to us.	Please see the response to Comment S-03-03 on the need for tritium. The need for nuclear weapons is beyond the scope of this EIS.
S-08-04	If we can't weigh them and choose between them, then why assess the environmental impact at all? Despite some quotes that have been made here today about Admiral Watkins' commitment to environmental safety, the fact of the matter is that on May 1 he announced the restart dates for these reactors, he's stated on several occasions that it's not his job to determine what we need in the way of nuclear materials, it's just his job to deliver those nuclear materials.	The National Environmental Policy Act (NEPA) of 1969 requires all Federal agencies to assess the impact of all major activities that significantly affect the human environment. Secretary Watkins' announcement did not constitute a decision to start up the reactors. Rather, it was a proposed schedule for preparing the reactors for production.
S-08-05	His particular statement is that he's supposed to operate the nuclear weapons production system in safety and in conformity with environmental laws. The reality of course is that you cannot have it both ways. You cannot produce nuclear materials and be within environmental laws. The two things are incompatible. There simply is no need for this weapons material which could justify the impacts that are given. I don't have to see the classified document to know that we just don't need it. I don't	DOE is fully committed to comply with all applicable Federal and state environmental regulations. Also, please see Chapter 5 for a list of Federal and state environmental requirements.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-08-06	know what the weapons are protecting us from any more, but I do know that whatever amount of fear we may have of the Soviet Union or any other foreign power that these weapons are supposed to be protecting us from, they do not endanger us as much as the restart of these reactors will endanger us. It's just that simple.	Please see the response to Comment S-03-03 on the need for tritium and nuclear materials. The need for nuclear weapons is beyond the scope of this EIS.
S-08-07	The sociological impacts in the Environmental Impact Statement have basically been limited to a statement of the number of jobs that will be lost if the reactors are not restarted. No assessment is made of the jobs that will be regained by engaging in a real cleanup of this site. There is no assessment of the relative costs of restart versus the cost of retraining and job placement assistance for the people whose jobs are lost that would be provided by adoption of the Weiss Economic Conversion Bill. There is no assessment of the long-range benefits of denuclearizing this area and making it acceptable for other forms of human activity such as business, industry, recreation and all the development that won't come into this area now because people don't want to live next to the Savannah River Site. Finally, the Environmental Impact Statement does not address the all important moral environment, which I encouraged you to address at the scoping hearings. For it's this moral environment that determines whether or not there can be a healthy, natural, social and psychological environment. One simply cannot have a healthy planet when one is producing materials for mass annihilation. If our hearts are willing to do such evil, not fire the weapons but nearly be willing to fire the weapons, then this evil spreads out and infects everything. And the world starts to die. You cannot build nuclear weapons environmentally. I want to just read — I'll only read part of what I was going to read from the Book of Jeremiah, Jeremiah Chapter 10. I'll start with verse 12: "I asked, God, why is the land devastated so that no one travels through it? Who is wise enough to understand this? To whom have you explained it so that they can tell it to others?" And God answered, "Well, this has happened because my people have abandoned the teaching that I gave them. They have not obeyed me or done what I told them. Instead they've been stubborn and they've worshipped other idols as their parents taught them to do. So then listen to what I the Lord God Almighty will do. I will give my people bitter	The scope of the EIS is, as stated in the Notice of Intent, to assess the environmental impacts of continued operation of K-, L-, and P-Reactors. DOE will deal with the impacts of waste management and environmental restoration in other NEPA documents. Please see the response to Comment S-02-02 on waste management and environmental restoration.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	plants to eat and poison to drink. I will scatter them among nations that neither they nor their ancestors have heard about. And I will send armies against them until I have completely destroyed them."	
	Mr. Patterson, it's because we have chosen to reject the commandments of God to love our enemies, to do unto others as we would want them to do unto us, to do good even to those who we believe hurt and misuse us — it is because we have rejected those commandments and sought to save ourselves through weapons that the land is poisoned and that indeed we risk being scattered into the nations.	
	What we need to do is not to come here and talk about environmental impacts of nuclear weapons production. What we need to do is we need to get down on our knees and we need to pray for forgiveness, we need to pray for love, we need to pray for the courage to start doing what we know is right and to stop doing what we know is wrong.	
	I'd like to invite you to join with me in praying for that because my heart needs to be changed, I need to be converted, and you need to be converted.	

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
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5-8

Exhibit

8



**NUCLEAR CONTROL
INSTITUTE**

DECLASSIFIED BY: 6032 DATE: 06-01-2008

May 23, 1990

President George H. Bush
The White House
Washington, D.C.

President Mikhail S. Gorbachev
The Kremlin
Moscow, U.S.S.R.

Dear Presidents Bush and Gorbachev:

We wish to call to your attention a unique opportunity that is made possible by your historic efforts to halt and reverse the nuclear arms race. Unless it is grasped promptly, however, it is likely to recede rapidly.

With large reductions in strategic and tactical nuclear weapons under active consideration, the United States and the Soviet Union, either by agreement or by reciprocal unilateral action, have the opportunity to avoid the further operation of old, potentially unsafe nuclear reactors for production of weapons materials and to avoid the spending of billions on replacement reactors.

We write in the hope that, in connection with the forthcoming summit, you will consider steps to realize such a remarkable achievement.

The window of opportunity is fast closing, however, as the United States prepares to restart its weapons production reactors, all of which have been shut down for safety reasons since June 1980, and to construct new production reactors. A principal impetus for these plans is the continuing production of weapons materials in Soviet military reactors during this period. While the Soviet side has announced a timetable for shutdown of its production reactors by the year 2000, this timetable is not reassuring to the U.S. side, which sees itself at a disadvantage because of the involuntary shutdown of its reactors while Soviet production continues.

Surely this unrelenting race to produce yet more ingredients for nuclear weapons—plutonium and tritium—deserves serious reexamination in light of the progress being made to end the nuclear arms race.

Strategies for stopping the spread and reducing the growth of measles cases

Paul L. Leventhal, President; Peter A. Bursford, David Cohen, Sam Adelman, Thomas H. Davis, 1991 Officer, David A. Hayes, John Henry, Robert Brown (ex officio), Roger Berkman, Dr. Theodore

C-379

Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response

Presidents Bush and Gorbachev
May 23, 1990
Page Two

Unless one side or the other actually contemplates increases in its stockpile of weapons, a credible case cannot be made for further production of plutonium. With a shelf life of thousands of years, plutonium is salvageable from retired weapons for possible reuse in replacement warheads. For the same reason, each side already has acted unilaterally to halt further production of highly enriched uranium, the other long-lived fissionable material, for use in weapons.

The issue of tritium production is somewhat more complicated because, unlike plutonium and highly enriched uranium, tritium decays relatively rapidly--over dozens of years. Its production must be continued to maintain the size of a nuclear arsenal. No fresh tritium need be produced, however, if warheads utilizing tritium are retired at a rate that keeps pace with or exceeds tritium's decay. Under those circumstances, tritium recovered from retired warheads would be sufficient to replenish tritium in the remaining warheads for many years.

A key consideration, therefore, is whether there are likely to be agreed or unilateral reductions in nuclear weapons in the immediate future that will make additional tritium production by either side unnecessary.

Major arms reduction initiatives are now moving forward, beyond the progress already made by the INF agreement and by unilateral actions. A START treaty, in combination with budgetary limitations on new deployments, will likely reduce the U.S. and Soviet strategic stockpiles by as much as several thousand warheads on each side. Even more substantial reductions in strategic weapons are being explored in post-START discussions already underway.

In addition, deep reductions in tactical nuclear weapons, negotiated or unilateral, now appear imminent as the result of political changes in Europe. The retirement of some 3,000 U.S. tactical nuclear weapons and of larger numbers of comparable Soviet weapons seems possible as pressure builds for removal of at least the land-based nuclear missile and artillery warheads from German territory. And growing sentiment for elimination of naval tactical nuclear weapons eventually could lead to the retirement of several thousand additional warheads.

These reductions would create a sizable tritium reserve on both sides to sustain remaining warheads and would make additional production a costly redundancy. Even now, the amount of tritium in the U.S. weapons inventory is sufficient to meet tritium requirements of 3,000 warheads for 35 years and 1,000 warheads for more than 50 years. We assume that a similar sufficiency to maintain an effective deterrent exists on the Soviet side.

Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response

Presidents Bush and Gorbachev
May 23, 1990
Page Three

We urge you both, therefore, to consider the desirability and the feasibility of a complete nuclear weapons materials production halt at this time. The halt need not await a complicated formal agreement. It can be achieved by reciprocal unilateral steps.

The Soviet Union need only accelerate its timetable for a shutdown of all production reactors, effective immediately or in the near future.

The United States need only defer plans for start-up of its production reactors and for construction of new production reactors.

Each side could maintain a number of production reactors on "cold stand-by" status as a contingency against a breakdown in the ongoing arms reduction process.

Such reciprocal, unilateral action could be verified immediately by satellite surveillance of shut-down reactors. Talks could begin on other verification and on-site inspection arrangements necessary to make possible a long-term production halt.

An immediate production halt would provide substantial domestic and international benefits without adverse military impact. Beyond avoiding the continued operation of aging, potentially unsafe production reactors and the building of costly replacements, the superpowers clearly would be signaling their intent to forego expansion of their nuclear arsenals and, indeed, to proceed with serious reductions over the next several decades. Yet, even if the arms-reduction process breaks down, or does not produce deep cuts that keep pace with tritium's steady decay, each side will still be in a position to restart the production reactors held on cold stand-by and to construct new reactors, if necessary.

Conversely, missing the present opportunity to achieve a production halt imposes a number of risks and costs, including those associated with continued production activities that could only feed the nuclear arms race and inspire other nations to follow suit. We hope, therefore, that you will explore this additional pathway to peace while the present opportunity lasts.

Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response

Presidents Bush and Gorbachev
May 23, 1990
Page Four

Sincerely,

<i>Hans A. Bethe</i> Hans A. Bethe	<i>Nicolaas Bloembergen</i> Nicolaas Bloembergen	<i>Peter Bradford</i> Peter Bradford
<i>George Bunn</i> George Bunn	<i>David Cohen</i> David Cohen	<i>William E. Colby</i> William E. Colby
<i>Thomas D. Davies</i> Thomas D. Davies	<i>Jonathan Dean</i> Jonathan Dean	<i>Paul Doty</i> Paul Doty
<i>Freeman J. Dyson</i> Freeman J. Dyson	<i>Ralph Earle</i> Ralph Earle	<i>Philip J. Farley</i> Philip J. Farley
<i>Herman Feshbach</i> Herman Feshbach	<i>Val F. Fitch</i> Val F. Fitch	<i>Randall Forsberg</i> Randall Forsberg
<i>Richard L. Garwin</i> Richard L. Garwin	<i>Victor Gilinsky</i> Victor Gilinsky	<i>Roswell L. Gilpatric</i> Roswell L. Gilpatric
<i>Sheldon Lee Glashow</i> Sheldon Lee Glashow	<i>Marvin L. Goldberger</i> Marvin L. Goldberger	<i>Kurt Gottfried</i> Kurt Gottfried
<i>Eldon V.C. Greenberg</i> Eldon V.C. Greenberg	<i>Denis A. Hayes</i> Denis A. Hayes	<i>Dudley Herschbach</i> Dudley Herschbach
<i>William A. Higinbotham</i> William A. Higinbotham	<i>Milton Hoenig</i> Milton Hoenig	<i>Robert C. Johansen</i> Robert C. Johansen

Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response

Presidents Bush and Gorbachev
May 23, 1990
Page Five

Vera Kistiakowsky	Julian Koenig	Betty G. Lall
Vera Kistiakowsky	Julian Koenig	Betty G. Lall
Leon M. Lederman	Paul Leventhal	Franklin Long
Leon M. Lederman	Paul Leventhal	Franklin Long
John H. Manly	J. Carson Mark	Jessica T. Mathews
John H. Manly	J. Carson Mark	Jessica T. Mathews
Robert S. McNamara	Marvin Miller	Philip Morrison
Robert S. McNamara	Marvin Miller	Philip Morrison
Russell W. Peterson	Edward M. Purcell	George W. Rathjens
Russell W. Peterson	Edward M. Purcell	George W. Rathjens
Stanley Resor	John B. Rhineland	Roger Richter
Stanley Resor	John B. Rhineland	Roger Richter
Gerard C. Smith	John D. Steinbruner	Theodore B. Taylor
Gerard C. Smith	John D. Steinbruner	Theodore B. Taylor
Kosta Tsipis	Stensfield Turner	Cyrus Vance
Kosta Tsipis	Stensfield Turner	Cyrus Vance
Victor F. Weisskopf	Jerome Wiener	Robert R. Wilson
Victor F. Weisskopf	Jerome Wiener	Robert R. Wilson

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	 NUCLEAR CONTROL INSTITUTE NON-PROFIT CORPORATION • 501(c)(3) • 1000 AVENUE OF THE STARS, SUITE 1000, WASHINGTON, DC 20005 • 202-462-7400 LETTER TO PRESIDENTS BUSH AND GORBACHEV <u>Niggers*</u> ✓ Hans A. Bethe, 1957 Nobel Laureate in physics, formerly headed the Theoretical Division at the Los Alamos National Laboratory and is emeritus professor of physics at Cornell University. Nicolaas Bloembergen, 1981 Nobel Laureate in physics, is a professor of physics at Harvard University and is president-elect of the American Physical Society. ✓ Peter Bradford is a former commissioner of the U.S. Nuclear Regulatory Commission. George Nuss is a member of the Stanford Center for International Security and Arms Control, and formerly served as deputy chairman of the U.S. Nuclear Non-Proliferation Treaty delegation and as general counsel of the Arms Control and Disarmament Agency. David Cohen is president of the Professionals' Coalition for Nuclear Arms Control and a former president of Common Cause. ✓ William E. Colby is a former director of central intelligence. ✓ Thomas D. Davison, Rear Admiral USN (Ret.), served as assistant director of the Arms Control and Disarmament Agency, where he headed the Nuclear Non-Proliferation Bureau and chaired the U.S. delegations in treaty negotiations with the Soviet Union on a comprehensive nuclear test ban and on environmental warfare. Jonathan Dean, an arms control advisor to the Union of Concerned Scientists, headed the U.S. delegation in the Mutual and Balanced Force Reductions negotiations. Paul Doty is a professor of public policy at the Kennedy School of Government and professor emeritus of biochemistry at Harvard University. Freeman J. Dyson, professor of physics at the Institute for Advanced Study, has been a frequent consultant to the Defense Department and the Arms Control and Disarmament Agency. * Current titles and affiliations for personal identification purposes only.	

C-384

Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response

Ralph Kerie is consultant and chairman of the National Advisory Board of the Lawyers Alliance for Nuclear Arms Control. He formerly served as Director of the Arms Control and Disarmament Agency and as chairman of the U.S. SALT II delegation.

✓ Philip J. Farley, member of the Stanford Center for International Security and Arms Control, was Director of Politico-Military Affairs at the State Department, Deputy Director of the Arms Control and Disarmament Agency and alternate chairman of the U.S. SALT I delegation.

Herman Feinbach, former chairman of the nuclear-science advisory committee of the National Science Foundation and former president of the American Physical Society and the American Academy for the Advancement of Science, is institute professor emeritus of physics at MIT.

Val L. Fitch, 1960 Nobel Laureate in physics and professor of physics at Princeton University, was a presidential advisor on science policy and arms control in the Nixon administration and a past president of the American Physical Society.

Randall Forsberg is executive director of the Institute for Defense and Disarmament Studies.

✓ Richard L. Garwin, a member of the President's Science Advisory Committee under Presidents Kennedy, Johnson and Nixon, as well as of the Defense Science Board advisory to the Secretary of Defense, is an IBM Fellow and science advisor to the director of research of IBM Corporation.

✓ Victor Gilinsky, a consultant, previously served as commissioner of the U.S. Nuclear Regulatory Commission and as head of the Physical Science Department at RAND.

✓ Roswell L. Gilpatric, an attorney, served as Deputy Secretary of Defense under Presidents Kennedy and Johnson.

Sheldon Lee Glashow, 1979 Nobel Laureate in physics, is Mellon Professor of the Sciences at Harvard University.

Harvin Goldberger is director of the Institute for Advanced Study and a former president of the California Institute of Technology. He chaired the committee on international security and arms control of the National Academy of Sciences.

Kurt Gottfried, is professor of physics and nuclear studies at Cornell University and a member of the Department of Energy's High-Energy Physics Advisory Panel.

Elton V.C. Greenberg, an attorney, served as general counsel of the National Oceanic and Atmospheric Administration and is of counsel to the Nuclear Control Institute.

Dennis A. Hayes, is chairman and CEO of Earth Day 1990 and a former director of the U.S. Solar Energy Research Institute.

Dudley Herschbach, 1986 Nobel Laureate in chemistry, is a professor of chemistry at Harvard University.

Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response

William Higinbotham, former head of the Technical Support Organization of the Department of Nuclear Energy at Brookhaven National Laboratory, is a consultant on nuclear materials management.

Milton Hoenig, a physicist, is scientific director of the Nuclear Control Institute and previously served in the Nuclear Non-Proliferation Bureau of the Arms Control and Disarmament Agency.

Robert C. Johansen is a director of graduate studies of the Institute for International Peace Studies at the University of Notre Dame.

Vera Kistiakowsky is professor of physics at the Massachusetts Institute of Technology.

Julian Koenig is president of Julian Koenig, Inc. and was a founding partner of Pappert, Koenig, and Lois, a New York firm, where he originated the name, "Earth Day," and engaged in commercial, political and public interest advertising.

Betty G. Lall is director of verification studies of the Council on Economic Priorities.

Leon M. Lederman, 1958 Nobel Laureate in physics, formerly headed the Fermi National Laboratory and is a professor of physics at the University of Chicago.

✓ Paul Leventhal, president of the Nuclear Control Institute, previously served as staff director of the Senate Nuclear Regulation Subcommittee and as special counsel of the Senate Government Operations Committee.

Franklin Long, adjunct professor of chemistry and social sciences at the University of California, Irvine and emeritus professor of chemistry at Cornell University, served as research supervisor of the National Defense Research Committee from 1942 to 1945 and as Assistant Director of the Arms Control and Disarmament Agency.

John H. Manly served as group leader (1943-1945) and technical associate director (1945-1951) at the Los Alamos National Laboratory.

J. Carson Mark served as head of the Theoretical Division of Los Alamos National Laboratory and has served on the U.S. Nuclear Regulatory Commission Advisory Committee on Reactor Safeguards and on the Science Advisory Board of the U.S. Air Force.

Jessica T. Mathews is vice president of the World Resources Institute.

✓ Robert McNamara served as Secretary of Defense under Presidents Kennedy and Johnson and as president of the World Bank.

Marvin Miller, a consultant to the Arms Control and Disarmament Agency, is senior research scientist with the Department of Nuclear Engineering and the Center for International Studies at MIT.

Philip Morrison is emeritus institute professor of physics at the Massachusetts Institute of Technology.

Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response

Russell W. Peterson, vice-chairman of the Better World Society and president emeritus of the Audubon Society, is a former director of the Congressional Office of Technology Assessment.

Edward M. Purcell, 1952 Nobel Laureate in physics, is emeritus professor of physics at Harvard University.

George W. Rathjens, professor of political science at MIT, was chief scientist in the Defense Advanced Research Projects Agency and in the Office of Special Assistant to the President for Science and Technology.

✓ Stanley Reser, a former Secretary of the Army, is chairman of the National Advisory Committee of the Lawyer's Alliance for Nuclear Arms Control.

✓ John B. Rhinelander, a partner of Shaw, Pittman, Potts, Trowbridge and Rhinelander, formerly was deputy legal advisor at the State Department and legal advisor to the SALT I delegation.

Roger Richter, president of the Continental Arbitrage Corp., is a former nuclear safeguards inspector of the International Atomic Energy Agency.

Gerard C. Smith, chairman of the Arms Control Association, served as chairman of the U.S. SALT I delegation and later as Special Representative and Ambassador-at-Large for Non-Proliferation Matters.

John D. Steinbruner is director of foreign policy studies at the Brookings Institution.

✓ Theodore Taylor, a consulting physicist, is a former nuclear weapons designer at Los Alamos and former deputy director (Scientific) of the Defense Atomic Support Agency.

Kosta Tsipis is director of the Program in Science and Technology for International Security at the Massachusetts Institute of Technology.

✓✓ Stanfields Turner, Admiral USN (Ret.), is a former U.S. director of central intelligence.

✓ Cyrus Vance was Secretary of State during the Carter Administration.

Viktor Weisskopf, former group leader of the Los Alamos National Laboratory and former director of CERN (the European Center for Nuclear Research), is emeritus institute professor of physics at MIT.

Jerome B. Wiesner, president emeritus of the Massachusetts Institute of Technology, chaired President Johnson's Science Advisory Committee and the Congressional Office of Technology Assessment.

Robert R. Wilson, director emeritus of the Fermi National Laboratory and professor emeritus of physics at Cornell University, was the wartime head of the Research Division of Los Alamos National Laboratory.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
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NUCLEAR CONTROL INSTITUTE

FOR RELEASE AND
Friday, May 25, 1990

CONTACT: Deborah Holland
Issues Director

**SA DIPLOMATS, SCIENTISTS AND OTHER EXPERTS
ASK BUSH AND GORBACHEV TO 'GRASP OPPORTUNITY'
TO HALT NUCLEAR MATERIALS PRODUCTION FOR WEAPONS**

In a letter sent to both President Bush and President Gorbachev, a distinguished group of American diplomats, scientists and other experts called on the two leaders to use the upcoming summit to reexamine and take steps to end the "unrelenting race to produce yet more ingredients for nuclear weapons."

Citing agreed and unilateral reductions in nuclear arms that already have taken place, as well as those anticipated in START and post-START agreements and in withdrawals of tactical weapons from Europe, the writers assert that enough materials could be recovered from retired weapons to "make additional production a costly redundancy." By halting production, "the superpowers clearly would be signaling their intent to forego expansion of their nuclear arsenals and, indeed, to proceed with serious reductions over the next several decades."

The letter, which was prepared and circulated for signature by the Nuclear Control Institute, was sent on May 23 and released today. The signers include seven Nobel Laureates, two former cabinet secretaries, a number of lead negotiators of past arms-control agreements, two former directors of the Central Intelligence Agency, and several who played important roles in the development of the U.S. nuclear arsenal.

Pointing to the "large reductions in strategic and tactical nuclear weapons under active consideration," the letter called on Bush and Gorbachev "to consider the desirability and feasibility of a complete nuclear weapons materials production halt at this time." Such a halt, the letter stated, would permit each side "the opportunity to avoid the further operation of old, potentially unsafe nuclear reactors for production of weapons materials and to avoid the spending of billions on replacement reactors."

The writers noted, however, that the "window of opportunity is fast closing" because the United States, whose military production reactors have been shut down for safety reasons for nearly two years, is now preparing to restart these reactors in response to the Soviets having continued to operate theirs during this period.

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Paul E. Lusk, President; Peter A. Brundage, Board Chairman; The Authors: Thomas B. Spence, 1990 Nobel Laureate; Robert J. Serber, 1990 Nobel Laureate; Roger Serber, 1990 Nobel Laureate; William J. Broad, 1990 Nobel Laureate; William J. Broad, 1990 Nobel Laureate; William J. Broad, 1990 Nobel Laureate.

Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response

More plutonium, which has a shelf life of thousands of years, would not have to be produced "unless either side actually contemplates increases in its stockpile of weapons," they declared. Even tritium, the other weapons material produced in reactors, which decays over dozens of years, need not be produced "if warheads utilizing tritium are retired at a rate that keeps pace with or exceeds tritium's decay. Under those circumstances, tritium recovered from retired warheads would be sufficient to replenish tritium in the remaining warheads for many years."

In calling for an immediate production halt, the writers declared that such a halt "need not await a complicated formal agreement. It can be achieved by reciprocal unilateral steps." The writers noted that the Soviet side "need only accelerate its timetable for a shutdown of all production reactors, effective immediately or in the near future," while the U.S. side "need only defer plans for start-up of its production reactors and for construction of new production reactors." Both sides, the letter said, could maintain a number of production reactors on "cold stand-by" status in case the ongoing arms reduction process breaks down or fails to produce deep cuts that keep pace with tritium's decay.

Reciprocal actions to achieve a halt "could be verified immediately by satellite surveillance of shut-down reactors" and could pave the way for talks on other verification and inspection arrangements needed to achieve a long-term production halt, according to the letter.

The writers concluded that the halt could be achieved "without adverse military impact" because of the ready option to restart production reactors. The domestic benefits would be great, they said, because of the avoidance of operating aging reactors and building costly replacements. The arms control message would be clear, they said, but warned of nuclear proliferation and other possible "risks and costs" in missing the present opportunity, "including those associated with continued production activities that could only feed the nuclear arms race and inspire other nations to follow suit.

"We hope, therefore, you will explore this additional pathway to peace while the present opportunity lasts."

In releasing the letter, Paul Leventhal, president of the Nuclear Control Institute, said: "Continued production of nuclear weapons materials makes no sense for either side at the present time. It's expensive, imposes unnecessary risks and sets precisely the wrong example for other nations."

The letter follows by about two months another letter signed by 13 arms control and environmental organizations calling on Congress to defer restart of the shut-down Savannah River production reactors and to defer construction of new production reactors.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-9	STATEMENT OF JOHN LINNEHAN	
	MR. LINNEHAN: My name is John Linnehan. I live in St. Mary's, Georgia, which is also the site of King's Bay Naval Submarine Base. I represent a community there called Metanoia Community, which is a peace and justice community, and also in a regional area, I represent the From Trident to Life Campaign in the southeast, which seeks to change national priorities to meet human needs.	
	I come from the site of perhaps the best customer for tritium, the Trident submarine at King's Bay Naval Submarine Base. Tritium, as you know, is used to enhance the explosive power of weapons. Why we need to enhance explosive power I'm not sure, but it does.	
	The Trident submarine is an awesome reality. It's our technology gone amuck. One Trident submarine contains 24 Intercontinental Ballistic Missiles. Each missile contains 8 warheads. Each warhead contains 475 kiloton of explosive power, almost one-half a megaton on one missile, which can destroy then -- the entire submarine can destroy 192 cities of over 100,000 people. One Trident submarine could destroy any continent on earth. A fleet of submarines, of Tridents, if they fire their weapons in an exchange, will destroy the planet.	
	So why we have to enhance explosive power, I do not know.	
	At present, at King's Bay Base, we have the U.S.S. Tennessee and the Pennsylvania. They want to have eight more Trident submarines there. They have eight already out at Bangor, Washington and they want to put bigger and larger explosive power on all of these; they want to extend the range; they want to increase accuracy.	
	All of this is a change in our policy from deterrence to first strike, something that has never been debated by the American public and yet the Pentagon planners, the admirals and the generals have changed the policy of this country which is going to affect each and every one of us if we ever get into an international affair and have to use these weapons.	
	We are a first strike country. We are planning to wage and win a nuclear war which scientists tell us is impossible to win because	

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	now it's counterproductive. There are no barriers to radiation. They go across national lines. The Cold War is over. But the people in Washington and the people in the agencies don't seem to be aware of that. Yesterday as I stood outside the gate of the Trident submarine base, inside the base were 12 U.S.S.R. citizens. What were they doing inside the base? They were counting warheads down on the submarine. They were a part of the verification process. They were on the base. I was outside the base. I am not able to go onto that base, a United States citizen. I have been banned from that base because on one day in 1984 I attempted to say a prayer inside that base. I cannot go on that base. And that's one of the problems with our Government. The citizens are not involved. And these statements which are made by the Governmental agencies are in-house statements. It's exactly the same as what we've seen recently with the report on the U.S.S. Iowa. The Navy investigated its own error. And now Congress goes and says the investigation is faulty. The words they use, it has an excess of certitude.	
S-09-01	I mean, it's like having the fox guarding the henhouse with these agencies. And as much as we appreciate the opportunity to come here and speak as citizens, we just have a feeling we're not being heard.	The National Environmental Policy Act requires DOE to consider all substantive comments on the Draft EIS in preparation of the Final EIS (40 CFR 1500-1508).
S-09-02	If anybody can convince me why we need more tritium today, I would join your ranks and join the Department of Energy. But no sane person can explain that. And particularly with the world situation going as it is. And not only are we endangered from what you say at the Savannah River Plant, just last week a story broke in Washington that the very nuclear weapons themselves are in danger of exploding or creating a massive plutonium-tritium spill. That was in the <u>Washington Post</u> story last week.	Please see the response to Comment S-03-03 on the need for tritium.

Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response

He came out and said he agrees that the configuration of the D-5 W88 warhead, he would not have approved had he been on the design plan in the early eighties. To me, reading between the lines, that means there's a defect there. And yet that story has been out a week and I haven't seen any reaction that we're liable to have an accidental detonation of nuclear weapons right here in southeast Georgia. And the Secretary of the Department of Energy indicates there's a defect there.

So I think we're in more danger from our own technology that's gone amuck than we are from any external agent. And I also believe that the whole emphasis in this country to gain a new moral attitude, the one thing I'll think about is the drug campaign, the war against drugs — we're admitting that as a country we are dysfunctional. We are addicted to drugs. But nobody is asking the question why are we addicted to drugs? The addiction is deeper than drugs. The addiction we have, folks, is to violence...

We are the most violent society the world has ever seen, and these weapons are the proof of it. And not just saying no to drugs, I conclude by saying as my sign says, just say no to tritium. Just cut off the supply, not from Columbia, but from the Savannah River Plant. Let's just live without the crack of tritium in our violent society.

Thank you.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-10	STATEMENT OF CHARLES F. WINCHESTER	
S-10-01	MR. WINCHESTER: I don't represent any organization. I don't really have a prepared statement. But I would just like to stand up and be counted because I am a citizen and I don't want to be among those many that are concerned but sit back and do nothing about it, read about it in the paper and see about it on T.V. I'd like to just say that the things that I've heard today and the things that I've read in the past frighten me. Something needs to be done and it's time to do something. It's time to think about where we're going, where our country is going and what we're going to do about it. I have a wife who's pregnant. She's seven months pregnant. And I have a little girl that's almost two years old. And I'm concerned about them. I'm frightened for their welfare and for their future. And if we don't stand up and be counted and say something and do something and let the people in power know what's happening and how we feel about it, then we're not really worth much. And I think it's time for us to stand up and say something and do something about it. I'd like to thank you for giving us the opportunity to be here today and I hope that more people will come tonight and let their voices be heard because each voice is important and one person can make a difference. Thank you.	Comments noted.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-11	STATEMENT OF REBECCA R. SHORTLAND at the U.S. Department of Energy's Public Hearing on the Draft EIS for Reactor Restart at Savannah River Site I am Rebecca R. Shortland of the Georgia Conservancy. The Georgia Conservancy is a state-wide citizens' organization that seeks to protect Georgia's environment and encourage responsible stewardship of Georgia's vital and natural resources. Although the Savannah River Site (SRS) is located in South Carolina, activities at the site affect the people and the environment of Georgia as well. The Georgia Conservancy has participated in comments and monitoring of plant activities for several years, including the scoping hearings for this Draft Environment Impact Statement (EIS). After reviewing the Draft EIS we find that our concerns are no less pronounced than they were at the beginning of this process. In our April 1989 scoping hearing comments we requested that the Department of Energy (DOE) take into account a full range of issues and impacts. While many of the topics of concern are mentioned in the Draft EIS, the majority are not adequately addressed.	
S-11-01	As an example, the Georgia Conservancy strongly recommended that DOE evaluate the cumulative impacts of radioactive releases, such as cesium, strontium and tritium, from regular water-borne and airborne releases. Not only is this question not addressed but the Draft EIS examines the impacts from the time of reactor restart eliminating the cumulative impacts of the past 36 years. This approach stimulates serious questions about assurances of public health.	Section 4.1.6 of the EIS discusses cumulative effects of radioactive releases. Section 4.1.2.4 gives special attention to cesium-137 impacts. Section 3.7 and annual environmental monitoring reports issued by DOE describe the extent of contamination from prior SRS operations. Chapter 4 presents projected environmental impacts from continued reactor operation.
S-11-02	The question of cumulative impacts is also a very serious one for the future of Savannah and Chatham County, Georgia. All economic development for the future is very closely linked to the availability of potable water from the Savannah River. The lack of information to truly assess radiation doses in a population that consumes fish, shellfish and drinking water from the river leaves an unknown future for this community.	The current potability of Savannah River water in relation to radioactivity reflects the entire prior discharge history of SRS as well as fallout deposition from prior decades. The river water and aquatic and marine species are now and have been well within applicable radioactivity standards for human ingestion, and there is no reason to expect

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
		that situation will change in the future (<u>Savannah River Site Environmental Report for 1988</u> , WSRC-RP-89-59-1). Risk assessments and environmental studies have accounted for potential cumulative impacts resulting from K-, L-, and P-Reactor operation.
S-11-03	The Georgia Conservancy also requested that DOE also assess the impacts on water quality and quantity taking into consideration the proposed expansion of the port of Savannah. This, too, is not adequately addressed.	Expansion of the Port of Savannah will have no impact on water quality parameters that are influenced by SRS operations. Increases in the water-using population (from about 70,000 to 317,000) will increase the collective ("population") dose, and DOE has considered this in its assessments of the impacts (see Section 4.1.6 of the EIS).
S-11-04	The Draft EIS is a disappointing document from the standpoint of state-of-the-art technology. The outline of environmental consequences of the preferred alternative indicates that destructive practices, such as the use of seepage basins and thermal discharges in wetlands, will continue. The result will be ongoing loss of wetlands and contamination of ground and surface waters. In addition, there are serious questions about the appropriateness of restarting K-Reactor at the end of this year without the use of cooling towers. This action defies the mandate of the Clean Water Act.	As a result of public comments, DOE is reevaluating its proposal to discontinue the use of seepage basins and to discharge processed purge water via SCDHEC-approved NPDES outfalls. The revision in Section 4.1.2.3 demonstrates that discontinuing the use of the seepage basins would result in greater public exposure to tritium than would continuing the present practice; Section 4.5.3 indicates that moderator detritiation cannot be justified on a dose-aversion basis. The operation of K-Reactor before the completion of the cooling tower is in accordance with a Consent Order (84-4-W) issued to DOE by SCDHEC. Section 4.1.1 of the EIS discusses impacts on wetlands, and Section 4.1.2 discusses impacts of ground- and surface-water contamination. A discussion of wetlands mitigation options has been added to Section 4.5.
S-11-05	Another significant issue is reactor safety. With many unresolved safety issues, such as seismic bracing and fire protection, the public cannot be assured of safe reactor operations for the future. In addition, by DOE's own admission, sufficient qualified personnel have yet to be found and trained. The lack of a completed Probabilistic Risk Assessment (PRA) and comprehensive emergency response plans (to include effective protective, cleanup and compensation methods) is a severe handicap in the public's ability to evaluate the Draft EIS.	Please see the response to Comment S-01-02 on safety. The study performed for the EIS took Level-1 PRA results (summarized in Section 4.1.3.1.5), analyzed the effects of upgrades and modifications on the core-damage frequency, and incorporated the current state of knowledge on Levels 2 and 3 to get estimates of reactor risk. The comparison of results shows the estimated decrease in core damage frequency due to upgrades and modifications. When the Level-2 and -3 PRA is completed, the expected results should indicate

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
		somewhat higher risk than those presented in the EIS because the PRA will not have accounted for upgrades and modifications, as explained in Section 4.1.3.1.5. See Section 3.9 on emergency preparedness.
S-11-06	While there is no mandate to do so, the Federal Facilities Assessment, currently being negotiated between DOE, EPA and the SC Dept. of Health and Environmental Control for the massive cleanup operations that are necessary at the site, should be integrated into the Draft EIS. Not least of the reasons to include this comprehensive plan is the resolution of "who pays" for the cleanup. This would set a significant precedent for future cleanups from operations at the site. In addition, officials from the Georgia Dept. of Natural Resources should be included in a meaningful way in the negotiations.	The Federal Facilities Agreement and its budgeting and implementation are beyond the scope of this EIS. Please see the response to Comment S-02-02 on waste management and environmental restoration.
C-396	S-11-07	Please see the responses to Comments S-03-03 on the need for tritium and other nuclear materials and S-01-03 on oversight.
	The basic question of need for so much weapons grade and other radioactive materials continues to be unapproachable by concerned citizens. By declaring the process of evaluation as classified and by using an outdated Nuclear Weapons Stockpile Plan (issued in the last days of President Reagan's administration), the public is essentially eliminated from the segment of the EIS process which determined the preferred alternative. The question of need should be subject to an environmental review as required by the National Environmental Policy Act. If national security truly requires that this question be kept classified, at a minimum Congressional oversight of the result should be provided.	
	Concerning other applications for the nuclear materials, the need for "relatively small quantities" certainly could not justify the very significant federal funding that is being applied to the SRS reactors.	
S-11-08	In conclusion, it is the opinion of The Georgia Conservancy that the intent of the Department of Energy is to return to past operating procedures, which shows little regard for the environment and the health of its people. The Draft EIS is unacceptable as it stands. We request that the DOE integrate, in good faith, all of the concerns expressed by citizens in the process of creating a new Draft EIS. The new draft should again be offered to the public for review and comment.	DOE considers the Draft EIS to have been adequate, and is proceeding with the NEPA process in publishing this Final EIS.
	Thank you for your consideration of these comments.	

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-12	STATEMENT OF DEBORAH KEARNEY	
	My name is Deborah Kearney. I live on (PO Box 1741) Tybee Island, Georgia. I am a self-employed psychologist in Savannah.	
S-12-01	While I have always been, and continue to be, appreciative of opportunities to speak out and voice my opinions and concerns, the "deja vu" experience of this process makes me question whether or not I'm really being heard. Because it seems that so many of my past concerns need to be repeated, the theme of this statement is probably best described as expressing a "lack of confidence."	Please see the response to Comment S-09-01 on public comments.
S-12-02	My lack of confidence begins with the discussion of need for re-starting K-, L-, and P-Reactors. If Appendix A must be classified, perhaps a listing of who has access to it would inspire confidence. At least I would know if anyone on the list is someone I have confidence in.	Please see the response to Comment S-03-03 on the availability of Appendix A to those who meet security requirements.
S-12-03	In the list of production options, I found no more than the mention of the recovery-re-use option to meet the tritium need. That option was not evaluated in detail nor was it discussed. I found no cost analysis of need vs. long-term cost to health, safety and the environment.	Recycling is being performed. Section 1.2 of the EIS discusses recycling facilities and the recycling of retired weapons. The supply of materials from recycling is considered in Appendix A in the analysis of the need for production of materials.
S-12-04	There is no discussion regarding the impact of these reactors in relationship to the clean-up process. We must find permanent solutions for waste management problems before we create more waste. Temporary solutions are no longer adequate.	Please see the response to Comment S-02-02 on waste management and environmental restoration.
S-12-05	Even though the conclusions at the ends of the discussions on soil, air, ground- and surface water, wildlife and habitat indicate "no significant impacts," I remain concerned. How can such a large facility handling such dangerous materials have no significant impact? I do not consider it legitimate to say, "No more impact than it has already made."	Please see the response to Comment S-03-02 on environmental impacts.
S-12-06	I did not feel reassured by the sections on cumulative effects. For example, I could not find the impacts of the planned new waste management facilities considered with cumulative effects.	In accordance with Council of Environmental Quality (CEQ) regulations (40 CFR 1500-1508), Section 4.1.6 presents the cumulative impacts of the proposed action, including the impacts of the related support facilities, and other existing and planned activities, both onsite and offsite. The onsite

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
		activities included in these impacts are, as stated in that section, the operation of new waste management facilities, including the Defense Waste Processing Facility (DWPF) and its associated facilities, the Consolidated Incineration Facility (CIF), and new low-level radioactive waste and hazardous/mixed-waste facilities. DOE will prepare an EIS that includes a more detailed discussion of support facility impacts.
S-12-07	Another major concern is methodology. The concept of discussing radioactive releases into the air and water in terms of even distribution does not make sense or reflect reality. Winds and water flow would create areas of greater and lesser density.	The distribution of radionuclides released from the SRS is based on the dispersion and dilution patterns of the Site's atmospheric and hydrologic environments, as described in Chapter 3 of the EIS.
S-12-08	The preparers of this EIS are either employees of DOE or of NUS Corporation. Was there a second reviewer? Have the National Academy of Science and the National Academy of Engineering reviewed this document? I see them listed to receive it, but shouldn't they be invited to review it? When any scientist submits an article or study to a scientific journal, blind reviewers examine it.	DOE provides copies of the Draft EIS to the general public, the scientific community, and appropriate regulatory agencies to review and provide comments.
S-12-09	Another example of why I lack confidence in this document involves <u>safety</u> . In a discussion meant to address NAS/NAE concerns about severe accidents, the Severe Accident Assessment Program (SAAP) is introduced. However, it is further stated that "it is not scheduled for completion before the resumption of production" (p. 2-53).	Please see the response to Comment S-01-02 on safety. Section 4.1.3.1.5 of the EIS addresses severe accidents.
S-12-10	In fact, the reactors have been shut down because of safety problems. This document's title seems to be a misnomer. We are discussing restart not continuing operation.	Section 2.1 and the Summary have been revised to define "continued operation." As explained in Section 2.1, DOE considers K-, L-, and P-Reactors to be in operation during the current outage.
S-12-11	In previous testimony, I had requested consideration of psychological impacts of concerns and fears regarding health, safety and environmental contamination concerns. I could find no such consideration. I lack confidence in this document. Until these concerns, and the concerns of other citizens, are addressed satisfactorily, none of the reactors at the Savannah River Plant facility should be operating. Thank you.	There is no scientific consensus on a methodology for predicting adverse psychological impacts on individuals or population groups. No basis has been established for such analyses in the scoping process for this EIS, nor is an analysis of the psychological impacts of the fear of risk required by NEPA.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-13	STATEMENT OF ELIZABETH B. TERRY Re: Hearings on Draft EIS for SRS'S K-, L- and P-Reactors	
	My name is Elizabeth B. Terry. I live and work in Savannah with my husband and two children. Last year I spoke concerning the need for an environmental impact statement prior to any decision to restart the reactors at the Savannah River Site. I am pleased that the EIS was completed, but I do feel that there are several things missing from the draft that need to be dealt with in a manner that more fully protects the interests of those who live near the SRS.	
S-13-01	As a down-wind and down-river neighbor of the SRP my principal concerns have been the issue of proper hazardous waste disposal and air pollution. Some of the conclusions reached in the draft EIS lead me to question whether the EIS gave adequate attention to the health and welfare of the citizens of this area. These concerns must be of at least some concern to the government, and must be weighed against the needs for defense. It does not seem that the two concerns should be presented in an either/or situation.	Please see the responses to Comments S-03-01 on the risks to health and S-03-02 on the environmental impacts of continuing operation.
S-13-02	Obviously, we do want to avoid a situation such as the Soviet Union had at Chernobyl. Yet the reactors in question are of similar design, and even older. The SRS reactors were shut down as a safety precaution at a time when they had already surpassed their life expectancy. The SRS reactors were shut down amid admissions of some considerable mishandling of hazardous waste disposal and also leaks of a toxic and dangerous nature. Estimates to clean up the mess created over 40 years ranges into the decades and billions of dollars. But instead of discussing the clean up we simply hear about plans to rebuild and restart the aging and unsafe reactors.	Because the nuclear and physical-chemical characteristics of SRS reactors are fundamentally different from those of the Chernobyl reactors, a similar accident at SRS reactors is physically impossible. Page v of the Foreword contains an explanation of why the reactors were shut down. Also, please see the responses to Comments S-01-02 on safety and S-05-07 on Chernobyl.
S-13-03		Please see the response to Comment S-02-02 on waste management and environmental restoration.
S-13-04	My main point and concern today is a simple one. I must take issue with an attitude and approach that is prevalent in the EIS document. Whenever there is discussion about the effect the restart will have on the environment; there is usually a statement such as; "since the reactors were in place prior to the applicable regulation they will not be required to comply with it."	Please see the response to Comment S-03-02 on environmental impacts.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-13-05	A good example of this faulty approach is in the section concerning Air Quality (5.2.7 page 5-12). The argument that these reactors were "in operation" prior to the time that the regulations existed is simply specious. When the reactors were built the country was in a race that required everything else to be set aside. There was neither the knowledge nor the concern for the health and welfare issues surrounding nuclear weaponry production. We have learned a great deal over the intervening years and we must use this knowledge at every opportunity to provide a safe and proper environment for the citizens of our great country. To say that a restart of the SRS reactors will not require the strictest of environmental protection is to ignore the lessons of Chernobyl and Three-Mile Island. It is also to ignore the fact that whenever the production of something creating a clear and present danger to our citizens is undertaken with the government's support; then surely the government should require that the producers will seek out and provide the highest standards for health and safety protection that are available to them. I was raised in an era that promoted the utmost trust and respect for our Government. In fact, I was ten years old when the SRS was first begun. I still trust and respect my government.. But this trust and respect does carry with it certain expectations. While I trust our Government to make the necessary and proper decisions regarding National Defense matters, I in turn expect these necessary decisions to be carried out in a manner that will protect the health and welfare of the citizenry to the greatest possible degree. This is not the time to look for loop holes in the regulations. Rather this is the time to require the highest standards of safety and environmental quality that science and technology can provide. Savannah and this beautiful coast should be a joyful place for my children to rear their children not a place filled with possible life and definite health dangers. We do NOT inherit the land from our fathers we borrow it from our children.	Section 5.2.7 refers to non-nuclear power plants and diesel generators in reactor areas. The operation of the reactors will be subject to the radiation dose limits established for DOE facilities. Chapter 5 summarizes the major Federal and state requirements applicable to the continued operation of the SRS reactors. Chapter 4, however, is explicit in discussing impacts, regardless of whether a particular facility is exempt from any requirements due to its age.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-14	STATEMENT OF ELIZA O. EVERETTE Greenpeace	
S-14-01	MS. EVERETTE: My name is Eliza Everette. I am seventeen years old. I don't have a prepared statement, but I have six things that maybe will make you think about the Savannah River plant reopening: leaking liquid waste containers, errors and failures and radiation monitoring equipment, aging of the reactors, lack of containment in the event of a reactor accident, inadequate fire detection and control, poor management and oversight practices.	DOE has discussed each of the six areas in the EIS. See Sections 2.1.2.7 and 2.1.2.8.2 on waste management and environmental restoration, 2.1.2.3.1 on monitoring, 2.1.3.1.2 on aging, and 2.1.2.3.1 on confinement and containment and fire detection. Also, please see the response to Comment S-01-03 on oversight.
S-14-02	Just looking at that should tell you that we don't need to have another Savannah River started up again because all it is, is it's going to happen again. I mean, just all I can say is clean up and don't start it again. I mean, why don't you ever think about the children and stuff? All I can say is clean up. All I really have to say is don't restart, just stop and clean it up, please.	Please see the response to Comment S-02-02 on waste management and environmental restoration.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-15	STATEMENT OF ROBERT LOGAN FERRELLE	
	MR. FERRELLE: My name is Bob Ferrelle. I live at 107 Salisbury Road, Wilmington Island. I didn't expect to speak this morning, someone asked me to. I'm glad to do it because I feel like we do have to speak up. I am against restarting the K-, L- and P-Reactors. You can see my little girl here I've been feeding gum and candy to so I'm down to my last few dollars and I need to go ahead and speak and get out of here.	
S-15-01	I saw a movie called Building Bombs, I don't know if anybody here has seen that. I saw it about a year ago and it shook me up. One of the things that movie pointed out was that there is a lot tritium that's been produced. Much more than we need to build bombs. And I'm kind of ignorant about this stuff, I'm not sure how the tritium is used and so forth, but we've got more than we need and I think stockpiled more than we need for quite a while. I may be wrong about that, but I think there's a lot we don't know as citizens.	Please see the response to Comment S-03-03 on the need for tritium.
S-15-02	The second thing I heard on NBC Nightly News one night, they were talking about Chernobyl and that that accident contaminated the ground there for it will be about 20,000 years before that ground can be inhabited by human beings again. And that's really wild. This is not even the year 2000 yet, so that's a long time.	Please see the response to Comment S-13-02 on Chernobyl and safety. Steps are being taken to preclude, as much as possible, mistakes and equipment malfunctions. For example, see Section 2.1.3.1.2 of the EIS.
S-15-03	I guess a question I have there is how can the DOE guarantee that we're not going to have that kind of thing happen? They can't because of human error. Human beings are fallible. We make mistakes. There's no way we can't make mistakes. And machines are fallible. They can't be perfect. And the third thing, and really top on my list, I guess, as I grow in parenthood, is my child. She is beautiful and I want the world to be a safe place for her. And that's why I'm talking.	Sections 2.1.2.8.1 and 2.1.3.1.2 contain discussions on human performance. Sections 2.1.2 and 2.1.3 discuss many equipment upgrades, work controls, and maintenance practices related to equipment reliability.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	And the fourth thing, the world has changed. Russia is changing, eastern Europe is changing quite a bit as we all know. I think people are changing. People are becoming more aware of the community we have. And I guess my last question goes to the DOE — when are you going to change? That's all I have to say.	

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-16	STATEMENT OF MICHAEL H. TERRY MR. TERRY: My name is Michael Terry. The chances of my speaking longer than five minutes are very slim because I'm about to lose my voice. Mr. Clarence Harrison yielded his time to me on condition that I make a statement for him because he did have to leave. Mr. Harrison is a resident of Hampton, South Carolina, a 1942 graduate of the University of Florida School of Agriculture and a Navy veteran from World War II. He was on Saipan when the Enola Gay dropped the atomic bomb on Hiroshima and two weeks later he landed at Hiroshima. According to him, the devastation that he saw was very frightening. He accepted the fact as a member of the military at that time that it was necessary, but as a current resident of Hampton, South Carolina, he is very concerned about that kind of thing happening by accident in his own backyard.	
S-16-01	He was particularly concerned with the high cancer rates that he's seen there and that basically concludes what he asked me to say for him. I'd like to take just a couple of minutes to endorse some of the things that have been said earlier. The main concern that I think we should have at this point if something is going to happen is that there be no compromises. The report as I read it clearly makes health and safety standard compromises.	Please see the response to Comment S-03-01 on health risks.
S-16-02	The requirements of air quality are compromised by saying that this is a pre-existing facility and this is consistent with the no action attitude in the EIS and this is not a no action approach. The restart is requiring a great deal of construction and whenever the Government is involved in activities such as this, the citizens require the utmost protection.	Please see the responses to Comments S-08-01 on no action and S-03-02 on environmental impacts.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-16-03	The building of new incinerators, waste disposal sites, all of this kind of thing must be under the highest state and Federal standards to protect the health and safety of our citizenry. And I don't see that dealt with at all in the EIS. Instead, they seek out loopholes to give them options to avoid compliance and the compliance should be at the highest level. Thank you.	Chapter 5 of the EIS summarizes all Federal and state regulations applicable to the continued operation of the SRS reactors and describes the status of DOE compliance with these regulations.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-17	STATEMENT OF AMANDA W. EVERETTE Greenpeace	
S-17-01	MS. EVERETTE: My name is Amanda Everette and I'm a member of Greenpeace and I would just like to say wake and smell the tritium because it's like they're acting really stupid because the floors of the plant have become sponge like because of exposure to the radioactivity and most of these plants were built during the McCarthy era when Communism was thought to be with everybody and I think it's really dumb and the way you like to say time is up — well, our time is up if you don't listen. So please listen because most people have a lot to say it's just that they're scared like me to say it. And don't worry about the children or teenagers — I have a very rare problem in my sinuses probably due to all this pollution around Savannah, the stink capital of the world. So that's all I have to say for now.	Comments noted.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-18	STATEMENT OF ROSANNE KIELY Peace Nexus	
	MS. KIELY: One is that I'm a member of a group called Peace Nexus, a local grassroots peace group and justice group here in Savannah and we've just put in place a peace pole and a peace park. And it's a pole that has on each of four sides the message may prevail on earth in four different languages. And so it stands as a universal symbol for world peace and unity. And it seems a funny time right now, an exciting time, everybody knows that the whole world is turning to peace and crying for justice and looking to the United States thinking that we're the high ideal of that and I'm a little bit ashamed of us and I think that it will come to light that maybe we are not as just a nation as we say we are to our own people because I don't think the Government is listening to us. I think they are deliberately not listening to us. I think it's a crazy world when in a government that says it's so just and cries for democracy that I have to drink bottled water from another area of the country because I know mine is not safe and I won't eat the fish from my own area because I know that it's not safe.	
S-18-01	And to know that my Government knows that it's doing this to this land and to pretend that it's not and to talk in sort of a mumble jumble and to put on things like this, though it's valid and important and necessary, it's kind of like a kangaroo court. I mean, it certainly serves its purpose of giving us a chance to express ourselves, but it's kind of a smoke screen. I don't think anyone is really listening to us and I think it's just a sad symbol of what American maybe is coming to. Something I was thinking about -- my parents brought some property recently in Tennessee by the Oak Ridge plant and I got really concerned because the close proximity of their property to that. So I had some friends in the environmental research area up there and had them check it out and they told me that my parents probably would be more safe there than I was living here in Savannah	Please see the response to Comment S-09-01 on public comments.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	down river from the Savannah River plant. So it made me think even more about SRP and of course all the things that you've heard today. But another thing that we haven't talked too much about today is just the condition of our society and of our community and I just really feel like we can't work for justice or peace in our country or in our community until we can heal the wounds of the community and we have the big business, the SRP, and so much of the Department of Energy is connected with big business and big money and politics and as long as there's that division between the regular people and that, there isn't justice in this society. I don't mean to be rude to you guys, but I don't know what you all are reading but it's real hard to talk to you when you start reading something else when I'm trying to talk to you. I truly say that not meaning to put you on the spot, but that is real difficult. But see — that's just another symbol of what's happening because you're almost like an absentee person.	
S-18-02	Like — are we really talking to you? Are you really representative of who's going to hear something and do something or are you just doing your job and going away like it's just a problem? It's just a problem. But this is America and it's not supposed to be that way, and the whole world is coming to find justice and freedom and looking to us, but this is what's really going on here. Maybe we will learn something from them, people who are really looking for true liberation and freedom. Anyway, I'll close with the chorus of a song which is almost more like a prayer that just has a lot of power to me and I hope it will mean something to you. I won't sing it, I will say it. If I can remember it. It says, "Now someone's on the telephone, desperate in his pain. Someone's on the bathroom floor, doing her cocaine. Someone's got his finger on the button in some room. No one can convince me we aren't gluttons for our doom. But I've tried to make this place my place, now I ask for providence to smile on me with his sweet face. 'Cause I tell you my place is of the sun and this place is of the dark. I do not feel the romance, I do not catch the spark. But by grace my sight grows stronger and I will not be a pawn for the Prince of Darkness any longer." Thank you.	Please see the response to Comment S-09-01 on public comments.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-19	STATEMENT OF SUZANNE PLOWDEN	
	MS. PLOWDEN: I'm Suzanne Plowden and I'm from Hilton Head Island.	
	I'm not as pessimistic as people who have spoken before me and I think it's very good that you're having this hearing so that we can talk to you and hear you listening to us. I hadn't intended to speak at all, it will be very short. In fact, I wondered what I would say. But then I remembered that when my husband, who is over there, and I were living in Brazil and we lived abroad a great deal, we were living in Rio de Janeiro, and we went down to Fradio where there were engineers building a nuclear plant for Brazil. And we were having a vacation and they were working on the nuclear plant. They were fascinating men. They were enjoying their work and why not, it was a beautiful place to work in. We got to know them quite well over our two-week vacation and I have no idea about the technicalities of nuclear production or of waste. But talking to these men it did impress me that they were all a little bit worried about -- excited about the project, but what about the waste? And when I said you mean you really don't know about waste when you build these things? This was by the way 12 years ago, Ted had not retired then. And they said, well, in the meantime, something would come along.	
	But engineers are not insensitive people. You of DOE are not insensitive people. All of us are worried about cleaning up waste but it can be done. That's why I'm optimistic. It can be done, it can save jobs that are lost by producing very, very bad things that we've needed, I'll admit. But now let us hope that we do not need them as much. In fact, let us be optimistic about all the things that you're doing and that Greenpeace is doing.	
	Now, my confession. My son is with Greenpeace. He is International Greenpeace. But his things are very positive things. He is saving the rain forests of Brazil in the Amazon, he spends a great deal of time there. He goes to Japan for the ITO, the International Timber Association meetings, he goes to the Ivory Coast. Ted and I have lived in India, we have lived in Malaysia, we have lived in all of these places that build quick nuclear things.	

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-19-01	All of us I hope will come to the stage where we are in control of this. It's something that was probably needed but let us hope it is not needed now and I do agree with those people who talked about we must not talk about continuation because this is restarting. We are starting something we may regret and I hope you can take that message back with you. Thank you very much.	Please see the response to Comment S-08-01 on the continued operation of the reactors as opposed to "restart."

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-20	STATEMENT OF MARTINA LINNEHAN	
	MS. LINNEHAN: I have no prepared remarks but would just like to say a few words about hope. And I guess that today the remarks that I have heard have made me think about the changes that are occurring in our world today, about the emphasis on democracy, about the emphasis on caring for the earth. And I guess what I'm thinking is that this is a time of tremendous change, a time of new beginnings and I think that it is a time for us to begin to think in a new way, to look at the past, to learn from the past and to begin thinking and acting in new ways.	
S-20-01	I think that the old technologies that we have used to develop, to produce and to deploy nuclear weapons is being evaluated. All of us need to begin looking at that seriously, all the way back to the production of all that goes into making weapons and producing the waste that has so polluted our wonderful earth. And I guess I'd just ask that you take back with you, Mr. Patterson, our message of being caring and compassionate people for the earth, that if we can send people to the moon, then I don't understand why we don't have the technology to clean up the waste that we have on our own earth. I thank you.	The need for nuclear weapons is beyond the scope of this EIS.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-21	STATEMENT OF JOHN MCKINNON	
	MR. MCKINNON: My name is John McKinnon and I'm a student here in Savannah, Georgia.	
	I was first introduced to the problem of Savannah River Plant when I was working with the grassroots organization living in Atlanta, Georgia and dealing with it from there is a more ideological problem, talking about it door to door, communicating to people about it.	
S-21-01	Since I've moved down here and started attending school, I've come to realize some of the day-to-day issues you have to take with this problem: realizing that the water that I drink out of my kitchen faucet has a little part of the Savannah River in it; that the water I use to cook my food with — that the water I have out has it; the soft drink has it; if I want to drink out of a water fountain at school or here in this hotel, it comes out of the Savannah River. When my friends come to town, I have to remind them not to drink this water. And it's not because I fear that drinking a glass of it is going to give them cancer, but it's because of the whole cumulative effect of poisons and toxins in the environment. My major concern isn't — people are talking about how safe it is to consume these things in small amounts in the water. I point out that when nuclear power and nuclear production were first introduced back in the fifties, the amount of radiation that you could consume in your body was phenomenal, legally. And science has told us progressively every single five or six years that we need to reduce the amount of radiation that we're consuming in our body. It's never been a situation where we find out that it's okay to consume a certain amount. It's always a smaller amount that we're allowing inside our bodies.	Please see the responses to Comments S-06-07 on the risk of drinking Savannah River water and S-11-02 on the potability of Savannah River water.
S-21-02	No one's ever done any long-term studies of low level radiation in any drinking water, so how can any group of people tell us that it is safe? That they can set any standards for this? Another question I have that has been brought up before is the real need practically for the restart of the tritium reactor.	Please see the responses to Comments S-06-01 and S-06-02 on low-level radiation, monitoring, and studies being conducted.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-21-03	Someone mentioned before that we don't actually need tritium for our nuclear arsenal. Even if you support the idea of nuclear warfare, why endanger an entire geographic location in this area by producing tritium that only enhances a nuclear explosion? We don't need to have that kind of power at our hands. It's enough that we can level cities with the plutonium and uranium that we use already on nuclear warheads. That's really all I would like to say.	Please see the response to Comment S-03-03 on the need for tritium.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-22	STATEMENT OF LAURA LEE WINCHESTER	
S-22-01	MS. WINCHESTER: My name is Laura Lee Winchester. I live in Midway, Georgia and I was not prepared to speak but by hearing everybody else speak it has spurred me on and I have wanted to say something. The organization that I guess I represent is a member of humankind, and I hope that is a member that everybody can represent here today. I have supported, mostly silently, many controversial and radical standings, nuclear disarmament is definitely one of them. Pro-choice is also another one. I have chosen to carry two children, this one is definitely on the way, and I also would like to be able to make the choice not to introduce a foreign agent into my body or environment. Just like the possibilities of our bodies rejecting that foreign body, our living mother earth which I greatly revere is going to reject it also and throw it back at us full force. I can appreciate the need to explore uncharted waters, nuclear energy, in order to progress. But does this mean that we have to subject ourselves to alterations to our environment and to our own molecular structure? I think not. We have so much natural energy that we have not even tapped yet. Let's explore those to its utmost before we jump headlong into a dangerous situation. I don't want my generation to just last a hundred years. I would like it to be able to last indefinitely. And if we say somebody else will take care of it, and that's what I've mostly done, when I say I've supported silently — I'll say, well, somebody else will stand up for me — that's why I got my husband to speak first, because I was too afraid to do so. But if we are too afraid to say what we dislike about something, then that's something nothing will be done for. So I felt that it was important for me to again stand up and be counted. And hopefully these words will reach the next generations and the next generations and they will be around to appreciate what we have done for their planet and hopefully take care of it. Thank you.	Comments noted.

C-414

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-23	STATEMENT OF DOUG SHOEMAKER	
	MR. SHOEMAKER: Hi. My name is Doug Shoemaker. And I'm speaking as an individual. And you know, what these hearings really need is a little bit of poetry. Here's one that fits the occasion. It's from Lewis Carroll's <u>Alice in Wonderland</u>. I quote: "You're old, Father William," the young man said, "And your hair has become very white. And yet you incessantly stand on your head. Do you think at your age this is right?" "In my youth," Father William replied to his son, "I feared I might injure the brain. But now that I'm perfectly sure I have none, why I do it again and again." "You are old," said the youth, "As I mentioned before and have grown most uncommonly fat, yet you turned a back somersault in at the door. Pray, what is the reason of that?" "In my youth," said the sage, as he shook his gray locks, "I kept all my limbs very supple by the use of this ointment, one shilling the box, allow me to sell you a couple." "You are old," said the youth, "And your jaws are too weak for anything tougher than suet. Yet you finished the goose with the bones and the beak -- pray, how did you manage to do it?" "In my youth," said his father, "I took to the law and argued each case with my wife. And the muscular strength which it gave to my jaw has lasted the rest of my life." "You are old," said the youth, "One would hardly suppose that your eye was as steady as ever. Yet you balanced a needle on the end of your nose what made you so awfully clever?" "I have answered three questions and that is enough," said his father, "Don't give yourself airs. Do you think I can listen all day to such stuff? Be off or I'll kick you downstairs." Well, Lewis Carroll wrote this so that even a child could understand that maybe old Father William wasn't exactly on the up	

Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response

S-23-01

and up. And I don't know how Lewis Carroll knew this sixty or seventy years before the fact, but I believe Father William was probably a DOE employee and maybe even prepared the statement that we have before us that we're discussing today, because it doesn't answer the questions that we asked here in Savannah back in December of '88 and in Aiken in April of '89. It doesn't address the need for the tritium.

Please see the response to Comment S-03-03 on the need for tritium.

We as taxpaying citizens are simply not allowed to know how much tritium this country has and to me, folks, that is not freedom and it's not representation. These hearings are pretty much just a rubber stamp. It's something the DOE has to do legally or else they can't restart their reactors.

S-23-02

And anything we say or do, no matter how loud we yell, no matter how much we jump up and down, they're going to restart those reactors anyway and they are going to continue to poison us because they don't care. All they're worried about is their one shilling a box totals, their paychecks, their money, their ability to sell their tritium to commercial needs, which they've still done.

Please see the response to Comment S-09-01 on public comments.

I just look out at the people here who are concerned, who have driven many miles to testify, and I want you to know that your efforts are not wasted because you are bearing witness to a moral injustice. And I want the people that work for the DOE, that are contracted by the DOE to look at your fingerprints because they're covered with blood.

Thank you.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-24	STATEMENT OF JULISA SKEELS MS. SKEELS: My name is Julisa Skeels and I am here from Jacksonville, Florida. In January of 1986, the Challenger exploded. We mourned. It was all over the media. I was in ninth grade. There was so much coverage for a handful of people who died. Should an accident occur here at this plant, many more than a handful of people would be affected. If the Government had known that the Challenger was going to blow up, would they have sent it anyway in the name of progress or in the name of some extended knowledge to use and transform into power against some supposed enemy? Sitting here today in the midst of a hearing, trying to persuade people not to inadvertently kill us, I am not sure of my answer. The glorification of the people who died in the Challenger accident is akin to the glorification of the death of Ryan White. I go to school in New York and I've been working closely with the AIDS issues. More people have died from AIDS than in the Viet Nam war, and one child is used to glorify and to pacify crowds of angry, nearly helpless people.	
S-24-01	Today we are supposedly being heard. What I am saying are only words. What the men over here are saying are only words. I will believe it when I see action. The lack of attention from the Government concerning the AIDS issue has been likened to genocide. If the power plant is restarted, then I feel our Government is really trying to prove just how murderous it can be. We do not need any more glorification or patronization. We need sensitive action. Thank you.	Please see the response to Comment S-09-01 on public comments.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-25	STATEMENT OF ANN O'BRIEN	
	MS. O'BRIEN: National defense is designed to ensure the safety of a country and its people. Our defense system in the past may have served this purpose. However, our present defense system, a nuclear defense system, utterly fails to protect the safety of the people of the United States. We taxpayers are paying for our own destruction. We are no longer giving money to the Government which will be used to suit our best interests. Our present nuclear defense system not only uses disgracefully dangerous methods in the production of our bombs, as has been evident at the Savannah River plant, but scientists now tell us that missiles are capable of going off by themselves in the installation process. Thirdly, we are not even safe in using these missiles we spend so many billions of dollars producing for the contamination of the environment caused by an atomic or hydrogen bomb explosion certainly passes beyond national borders.	
S-25-01	We are concerned about how the Chernobyl accident affects us but not about how our bombs on foreign soils will hurt us or about how the production of our bombs here hurt us, especially us downstream from the Savannah River plant. I think I'd like to move to Washington, D.C. Now, for years, the Government has kept on producing missiles of greater magnitude for the deterrent purposes of mutually assured destruction. We have enough bombs now. The more we produce, the greater danger we put ourselves in. The Soviet Union has ruined its economy, and much of its environment as Chernobyl shows, in the production of bombs. Can we not learn from this? Is our Government incapable of change? The Soviet Union can no longer afford to keep up with our bomb production, so why do we keep challenging them? I think we have enough bombs and I hope that something will become of this hearing and that someone will listen to us. Thank you.	Please see the response to Comment S-05-07 on Chernobyl.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-26	STATEMENT OF MELINDA STONE MORTON	
	<u>Comment on the Draft Environmental Impact Statement for Savannah River Plant's K-, L- and P- Reactors</u>	
	My name is Melinda Stone Morton. I am a native of the southeast region of the U.S., born in Tennessee, raised in Kentucky, Georgia, and North Carolina, resident for many years in the Appalachian mountains of Tennessee and Virginia. Most recently, I have been working in volunteer hurricane recovery efforts in McClellanville, South Carolina.	
	I have three children and two grandchildren and I have worked as a teacher, community organizer, and writer, among other jobs. I have a law degree from the University of Tennessee and am licensed to practice law there.	
	I am very concerned about protecting the environment for ourselves and for future generations and have worked for different environmental causes and for an environmental lawyer. I am concerned, as well, about the need for adequate housing and have worked with Habitat for Humanity, headquartered in Americus, to build houses for people in need.	
	You are going to hear plenty of scientific facts and mathematical statistics today. I want to talk instead about the feelings of the human heart and soul and about human needs.	
	I have come to Savannah today to testify because of the childhood memories I have of this place and because of the love and friendship I feel for the people here and for the city. I first came here in 1947 as a child of seven when my father's job with a plywood company, transferred him here. I lived and attended school on Tybee Island for a few months and also attended Charles Ellis School. Our family was transferred again in 1948, an impressionable time. Perhaps because I was fortunate in having a progressive and caring schoolteacher mother to guide my education outside the classroom, I experienced much and took in many impressions while I was here.	

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	More than anything I think I remember the beauty and the bounty of this place: the marshes, the curving tidal creeks, the inland woods and swamps, the sea islands, the inlets and rivers, the ocean. I also remember the delicious seafood dinners we enjoyed, both from restaurants and from our own catch. We fished and crabbed at Tybee, and the unpolluted waters were productive. I remember moving inland and making friends with new neighbors on Buckhalter Road, Sarah and Henry. They were an elderly black couple who grew wonderful collard greens, and my mother used to buy collards from them. Sarah also took in laundry and did ironing to make ends meet. I may never have told them but I loved them then and still do for their basic, honest goodness and for their kindness to the little girl that was me. I moved away and didn't return to Savannah except to pass through until a few years ago when I spent a day trying to show my youngest child some of the things I remembered about this beautiful city I had lived in when I was about his age. Much has changed, of course, in forty-plus years, but much remains the same. Some of the things that remain the same are beautiful and good: the parks, the architecture, the vistas. But not everything is good. One thing that remains the same but that is not good is the condition of some of the housing that many people, mostly Black, it appears, live in in downtown Savannah.	
S-26-01	Similarly, some of the changes that have occurred are good, and some are not. One of the changes that is frightening is the environmental degradation of the Savannah River caused by releases of radioactive material at the Savannah River Plant. Both of these problems — substandard housing and environmental degradation — are linked either directly or indirectly to the Savannah River Plant and other weapons production facilities, and that is why I came here today to ask you to listen for a moment to my concerns. The root cause of both of these problems, I believe, is excessive spending for military purposes, with corresponding inadequate spending for social needs.	Please see the response to Comment S-11-02 on cumulative impacts to the Savannah River.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-26-02	The restart of reactors at the Savannah River Plant will only serve to exacerbate these problems, to make them worse. The restart will cause more damage to the Savannah River environment. The restart will channel more funds into the production of weapons and correspondingly will take funds needed for housing. We do not need to have those reactors restarted. Instead we need a cleaned-up, healthy and bountiful natural environment. Especially do many Black people and others who work at low-paying jobs, with wages insufficient to support the costs of decent rental housing or home ownership, need to be considered when decisions are made that ultimately affect the federal budget for government housing programs and home loans. Money spent by the Department of Energy to revamp and upgrade facilities for weapons production is money that is not available for housing and other human needs. We need a new definition of national security, one that is concerned with meeting needs of people and the planet rather than producing weapons.	Please see the response to Comment S-11-02 on cumulative impacts to the Savannah River.
S-26-03	In recent years and months, the international political scene and the prospect for arms control has improved tremendously. The rationale for a number of weapons systems has simply evaporated. Congress has recognized this and is cutting funds for weapons production. This tritium produced at the Savannah River Plant won't be needed. But decent housing will continue to be needed. How then can you justify the expenditure of huge amounts of money for the continuing operation of the bomb factory? The money that is used for wages and materials in the military industrial complex could better be spent for wages and materials in the human services sector. The bomb plant should be scaled back, not geared up. The environmental degradation that has already occurred should be cleaned up, not added to by a restart. The Savannah River Plant has become a hindrance rather than a help to the people of this beautiful city in this beautiful natural place, the savannah for which the river and the city were named. Shut down the bomb plant! Clean up the river! Help the people in Savannah!	Please see the response to Comment S-03-03 on the need for tritium.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-27	TESTIMONY OF CHERYL JAY Chairperson Coastal Citizens for a Clean Environment Department of Energy Draft Environment Impact Statement Hearings Savannah, Georgia May 31, 1990	
C-422 S-27-01	Long before there were organizations such as Coastal Citizens for a Clean Environment, the Department of Energy (DOE) ran the Savannah River Nuclear Weapons Material Production Plant (SRP) with total disregard for the health and safety of its workers, the environment and the people of Georgia and South Carolina. Since the late seventies groups like ours have been working to make the public aware of the cavalier "production at any cost" attitude that the DOE displayed which led to the complete cessation of new nuclear weapons material production at SRP. The reactors have been shut down since 1988. The Department of Energy has no intentions of running SRP within the Nuclear Regulatory Commission's guidelines for commercial nuclear plants and has not even fulfilled even its own safety requirements and yet here we are discussing restart of the decrepit K, L, and P Reactors. The fall of the Iron Curtain has not been recognized by the DOE. The need for nuclear weapons to deter the "Red Peril" can no longer be demonstrated to rational U.S. citizens. In the light of recent arms control talks and the cuts in new nuclear weapons systems, this EIS should be addressing the decommissioning of the "bomb plant" instead of restart.	Many NRC guidelines are specific to commercial power reactor design, which is not equivalent to SRS reactor design. DOE operates the SRS reactors in compliance with its own safety criteria, which are comparable (but not identical) to those the NRC applies to commercial nuclear power facilities. Both NRC and DOE have a safety philosophy on the design, construction, and operation of facilities. Also, please see the response to Comment S-01-03 on safety oversight.
S-27-02	The DOE has been given taxpayers' money by Congress to clean up the environmental cesspools it has created in the name of nuclear deterrence. The use or misuse of these environmental restoration funds needs to be scrutinized before the DOE attempts to revive the antiquated reactors at SRP. Why is 80 million dollars of clean up money being used to build a cooling tower for the K Reactor? This clearly is a misappropriation of clean up funds for weapons production. DOE Secretary Watkins has stated that the DOE does not have the technology needed to clean up the nuclear weapons facilities. Watkins will never have this technology if he continues to divert environmental restoration funds into plutonium reprocessing in Washington State and cooling towers in the Southeast. It is apparent the the DOE is still putting production foremost on its agenda.	Please see the response to Comment S-02-02 on waste management and environmental restoration. Funding is not within the scope of this EIS; however, funds for cooling-tower construction are not contingent on environmental restoration funds.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-27-03	The millions of gallons of high level radioactive waste accumulated at SRP over the last 40 years will take at least half that time to be put into a more manageable but no less deadly glassified form. According to the DOE figures in the draft EIS, each year of operation of the K, L, and P Reactors will create enough high level radioactive waste to extend this process by three months or more. The glass vitrification plant has yet to process a single drop of dangerous nuclear byproducts but with the restart of these reactors the process will continue on beyond 2010.	The Defense Waste Processing Facility (DWPF), which is scheduled to begin operation in 1992, will convert the high-level waste into an essentially insoluble form not subject to environmental transfer. The associated saltstone plant for processing low-level waste from high-level waste tanks began operation in June 1990.
S-27-04	Radioactive tritium seepages into the groundwater from the past 40 years of nuclear weapons production will continue for up to 30 years according to the draft EIS. The DOE plans to again discharge tritium into our environment with the proposed restart. The draft EIS states that the Department of Energy plans to restart the aged SRP reactors before the completion of a probabilistic risk assessment. Resumption of nuclear weapons production must not be allowed before this basic safety procedure required of all commercial facilities is fully operational.	Please see the responses to Comments S-06-02 and S-06-06 on radiological risks and changes in discharge patterns.
S-27-05		The NRC has only recently (NRC Generic Letter 88-20) required the commercial power industry to perform an Independent Plant Evaluation (IPE) for each commercial reactor. This IPE can be satisfied by the completion of a full-scope Level-1 PRA for internal events, and a Containment System Performance study, which can best be described as a limited-scope Level-2 PRA. While the IPE is being done, there is no requirement for the reactor to shut down until the analysis is completed; in fact, a licensee has 3 years in which to complete the IPE. Thus, while recognizing the usefulness of a PRA as an analytical tool, NRC does not consider its completion to be a prerequisite to continued operation of a licensed power reactor.
S-27-06	The draft EIS proposes three alternatives for the restart of the Savannah River Plant. Speaking as chairperson of Coastal Citizens for a Clean Environment, our membership finds Alternative #1, restart of the ancient SRP reactors under the DOE's proposed operating procedures totally unacceptable for the environmental and human safety of this region. We would urge the DOE to follow its own alternative #3 and have the reactors in cold standby until a need for continued nuclear weapons production is clearly demonstrated in today's changing political climate.	Comment noted.
S-27-07		The need for nuclear weapons is beyond the scope of this EIS.

Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response

S-28

STATEMENT OF WARREN WHIPPLE
Greenpeace Action

MR. WHIPPLE: My name is Warren Whipple. I represent Greenpeace Action. Gentlemen, Greenpeace feels that the level of devastation, the types of materials that are being produced over there, the types of Pandora's Box that you're sitting on at that site over there of things that you do not understand doesn't even merit discussion at this point.

You are thinking about producing materials which the technology does not exist to clean up. We understand how the DOE works. We all understand what you are charged with constitutionally and all that sort of thing. You are going to make the materials anyway if you determine that there is a need. And that is what we would like to focus on. That question of need.

To that end in your own environmental statement, in the draft, on page 263, you say, "Need for materials: Appendix A," which is classified, "provides quantitative discussion of the need to produce nuclear materials, including impacts of determination," blah, blah, blah.

S-28-01

It is good to know that this quantitative discussion has occurred. It would be helpful to some of us to actually know: Is there a need? And what is this need? Are we facing a drastic tritium shortage that is going to put us on the back burner of world power? So drastic that we have to start it up by December?

Please see the response to Comment S-03-03 on the need for tritium.

On page 1-3, you also state, "The potential exists that the materials requirements could decrease in the future due to the change in world geopolitical situation, e.g., political strategic arms reduction talk treaties, potential reduction of the U.S. technical presence in NATO and budget constraints. A qualitative analysis," another one, "indicated that although the potential for significant reductions to material requirements exists, it is not likely that the requirements for the near term will change significantly. This is due to the long lead time following enactment of a treaty before recycled materials from retired weapons would become available. Thus, although material requirements might change in the future, the current nuclear weapons stockpile memorandum remains the basis for the analysis in this EIS."

Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response

This is all wonderful. We have no grounds to which to talk to you about this. All of this material is classified. Therefore, all we are left with is a letter that a group called the Nuclear Control Institute — this is not all we are left with, but the thing that we would like to introduce into the record today is a letter that was put together last week by the Nuclear Control Institute in Washington. It was drafted, my associate, Tom Clements, will read it following my testimony to keep us within your 5-minute limit.

I would simply like to point out some of the people who signed this letter and were instrumental in the putting of it together:

Hans Bethe, 1967 Nobel Laureate in physics, former head of the Theoretical Division at Los Alamos National Laboratory.

Peter Bradford is a former commissioner of the U.S. Nuclear Regulatory Commission.

William E. Colby the former director of Central Intelligence.

Thomas D. Davies, Retired Rear Admiral, U.S. Navy, chaired the U.S. delegations in treaty negotiations with the Soviet Union on a comprehensive nuclear test ban and on environmental warfare.

Philip J. Farley, Director of Politico-Military Affairs at the State Department, formerly, Deputy Director of the Arms Control and Disarmament Agency and alternate chairman of the U.S. SALT I delegation.

Richard L. Garwin, a member of the President's Science Advisory Committee under Presidents Kennedy, Johnson and Nixon.

Roswell Gilpatric, served as Deputy Director of Defense under Presidents Kennedy and Johnson.

Paul Leventhal, President of the Nuclear Control Institute.

Robert McNamara, served as Secretary of Defense under Presidents Kennedy and Johnson and as president of the World Bank.

Stanley Resor, former Secretary of the Army.

John B. Rhinelanders, formerly was Deputy Legal Advisor at the State Department and the legal advisor to the SALT I delegation.

C-425

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	Theodore Taylor, formerly nuclear weapons designer at Los Alamos.	
	Stansfield Turner, Retired Admiral, U.S. Navy, former U.S. Director of Central Intelligence.	
	And Cyrus Vance, former Secretary of State during the Carter Administration.	
	The letter pretty much speaks for itself. In the future and in this final draft, in the Final EIS, this question will not be resolved. Until the question of need, a need so great as to overwhelm all the things that you have been hearing today and all the things that you will be hearing in Columbia and in Aiken, this need question will have to be addressed to expect any kind of satisfaction or anything from us. Thank you.	

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-29	STATEMENT OF THOMAS CLEMENTS Greenpeace Action	
	MR. CLEMENTS: My name is Tom Clements and I work for Greenpeace Action and work on disarmament issues specifically, regarding Department of Energy policy at the Savannah River particularly.	
S-29-01	Cheryl Jay has pointed out some symbolism of Westinghouse symbols and logos. Well, SRS actually stands for Stop Restart. And that is what I think is going to happen, that the restart is going to be stopped. And I want to read this letter because I think it is quite important in what is happening right now with the strategic arms reduction talks that are happening and the change in the world climate. As Mr. Patterson mentioned, Alternative 3 is to terminate operation of the three reactors and place them on cold standby. And I predict this is going to happen because of everybody here tonight and the changing global climate that is happening. The letter that Warren mentioned previously was sent to President Bush and Mikhail Gorbachev on May 23rd, last week. It has not gotten a lot of attention, but as he mentioned, it was signed by McNamara, Cyrus Vance, Colby, ex-CIA Director. And, basically, this is also Greenpeace's thinking regarding the production of tritium and that the reactor should not be restarted. "Dear Presidents Bush and Gorbachev: We wish to call to your attention a unique opportunity that is made possible by your historic efforts to halt and reverse the nuclear arms race. Unless it is grasped promptly, however, it is likely to recede rapidly. With large reductions in strategic and tactical nuclear weapons under active consideration, the United States and the Soviet Union, either by agreement or by reciprocal unilateral action, have the opportunity to avoid the further operation of old, potentially unsafe nuclear reactors for production of weapons materials and to avoid the spending of billions on replacement reactors.	Comments noted.

Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response

We write in the hope that, in connection with the forthcoming summit," which is happening right now, "you will consider steps to realize such a remarkable achievement.

The window of opportunity is fast closing, however, as the United States prepares to restart its weapons production reactors, all of which have been shut down for safety reasons since June 1988, and to construct new production reactors. A principal impetus for these plans is the continuing production of weapons materials in Soviet military reactors during this period. While the Soviet side has announced a timetable for shutdown of its production reactors by the year 2000, this timetable is not reassuring to the U.S. side, which sees itself at the disadvantage because of the involuntary shutdown of its reactors while Soviet production continues.

Surely, this unrelenting race to produce yet more ingredients for nuclear weapons — plutonium and tritium — deserves serious reexamination in the light of the progress being made to end the nuclear arms race.

Unless one side or the other actually contemplates increases in its stockpile of weapons, a credible case cannot be made for further production of plutonium. With a shelf life of thousands of years, plutonium is salvageable from retired weapons for possible reuse in replacement warheads. For the same reason, each side already has acted unilaterally to halt further production of highly enriched uranium, the other long-lived fissionable material, for use in weapons.

The issue of tritium production is somewhat more complicated because, unlike plutonium and highly enriched uranium, tritium decays relatively rapidly — over dozens of years. Its production must be continued to maintain the size of a nuclear arsenal. No fresh tritium need be produced, however, if warheads utilizing tritium are retired at a rate that keeps pace with or exceeds tritium's decay. Under those circumstances, tritium recovered from retired warheads would be sufficient to replenish tritium in the remaining warheads for many years.

A key consideration, therefore, is whether there are likely to be agreed or unilateral reductions in nuclear weapons in the immediate future that will make additional tritium production by either side unnecessary.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	Major arms reduction initiatives are now moving forward, beyond the progress already made by the INF agreement and by unilateral actions. A START treaty, in combination with budgetary limitations on new deployments, will likely reduce the U.S. and Soviet strategic stockpiles by as much as several thousand warheads on each side. Even more substantial reductions in strategic weapons are being explored in post-START discussions already underway.	
	In addition, deep reductions in tactical nuclear weapons, negotiated or unilateral, now appear imminent as the result of political changes in Europe. The retirement of some 3,000 U.S. tactical nuclear weapons and of larger numbers of comparable Soviet weapons seems possible as pressure builds for removal of at least the land-based nuclear missile and artillery warheads from German territory. And growing sentiment for elimination of naval tactical nuclear weapons eventually could lead to the retirement of several thousand additional warheads.	
	These reductions would create a sizable tritium reserve on both sides to sustain remaining warheads and would make additional production a costly redundancy. Even now, the amount of tritium in the U.S. weapons inventory is sufficient to meet tritium requirements of 3,000 warheads for 35 years and 1,000 warheads for more than 50 years. We assume that a similar sufficiency to maintain an effective deterrent exists on the Soviet side.	
	We urge you both, therefore, to consider the desirability and the feasibility of a complete nuclear weapons materials production halt at this time. The halt need not await a complicated formal agreement. It can be achieved by reciprocal unilateral steps.	
	The Soviet Union need only accelerate its timetable for a shutdown of all production reactors, effective immediately or in the near future.	
	The United States need only defer plans for start-up of its production reactors and for construction of new production reactors.	
	Each side could maintain a number of production reactors on "cold stand-by" status as a contingency against a breakdown in the ongoing arms reduction process.	

Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response

Such reciprocal, unilateral action could be verified immediately by satellite surveillance of shut-down reactors. Talks could begin on other verification and on-site inspection arrangements necessary to make possible a long-term production halt.

An immediate production halt would provide substantial domestic and international benefits without adverse military impact. Beyond avoiding the continued operation of aging, potentially unsafe production reactors and the building of costly replacements, the superpowers clearly would be signaling their intent to forego expansion of their nuclear arsenals and, indeed to proceed with serious reductions over the next several decades. Yet, even if the arms-reduction process breaks down or does not produce deep cuts that keep pace with tritium's steady decay, each side will still be in a position to restart the production reactors held on cold stand-by and to construct new reactors, if necessary.

Conversely, missing the present opportunity to achieve a production halt imposes a number of risks and costs, including those associated with continued production activities that could only feed the nuclear arms race and inspire other nations to follow suit. We hope, therefore, that you will explore this additional pathway to peace while the present opportunity lasts."

That is the end of the letter and we just wanted to enter this into the record. And I will give you a copy of these materials. I am going to be presenting formal testimony in Aiken, South Carolina, but as I said to begin with, this supports Alternative 3 to retain the reactors on cold standby. And I would encourage any of you out there who have some feelings about this issue and are not signed up to speak please to do so. To my knowledge, all of the morning speakers, there was nobody in favor of the Department of Energy's position on restarting the reactors. Everybody needs to go on record to say that.

Thank you very much.

C-430

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-30	STATEMENT OF JOHN NEAL Midland, Georgia	
S-30-01	MR. NEAL: My name is Johnny Neal and I am from Midland, Georgia. I am opposed to the restart of all three reactors at the Savannah River Site. I believe our nuclear weapons stockpile has far surpassed a reasonable level. I believe the health hazards resulting from nuclear waste and radiation leaks need to be reversed. The many jobs located at SRS needs to be redirected towards cleaning up these health hazards. I am in no way for the continuation of the production of nuclear weapons materials. Thank you.	Please see the response to Comment S-02-02 on waste management and environmental restoration. The need for nuclear weapons is beyond the scope of this EIS.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-31	COMMENTS OF TIM CONNOR Analyst, Energy Research Foundation 537 Harden Street Columbia, SC 29205 (803) 256-7298, (404) 736-5106 [These are Mr. Connor's written comments. He also made an oral statement.] RE: DOE/EIS 0147D, Draft Environmental Impact Statement Continued Operation of K-, L-, and P-Reactors Savannah River Site Aiken, South Carolina My name is Tim Connor. I live at 801 Monte Sano Ave. in Augusta and am a staff member at the Energy Research Foundation, a non-profit private foundation based in Columbia, South Carolina that is primarily devoted to the study of nuclear weapons production. My comments today will focus primarily on three areas where I believe the draft document is inadequate. The three areas have to do with the formulation and presentation of long-term environmental risks to people living near and downstream of the Savannah River Plant. The gist of my comments on these points is that while the document contains some interesting and useful information it is nevertheless technically and philosophically flawed.	Please see the response to Comment S-09-01 on public comments.
S-31-01	Before I get to that I'd like to say that I think the main flaw lies in the process itself. As one who has participated in a fair number of DOE-sponsored NEPA proceedings over the years I have come to respect the patience with which department officials attending and supporting these hearings have received and responded to public comment. But at the same time most of us realize that the process itself is a charade. The intent of the law is that these proceedings be used as a tool for good decision-making, that somehow decisionmakers will evenly weigh the purported benefits of operating these plants with the real and potential environmental and public health consequences. When it comes to nuclear weapons plants, however, it is clear that the process begins with the decisions already having been	

C-432

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	made. The scale on which our questions, comments, and concerns are to be weighed is permanently tipped to one side. Because the "need" for nuclear materials is described in the absolute terms of national security there is absolutely nothing we can present that would be allowed to upset the balance.	
C-433	Unfortunately, the logical extension of this policy is that everything else has been expendable. Indeed, this is how U.S. nuclear weapons policy has given us two histories. One is written—as this document has been written—by the institutions that have provided the rhetoric and ammunition for the U.S. half of the nuclear arms race. The other history is only now beginning to be written and beginning to get the attention it deserves. It exists among people in the Marshall Islands and in Nevada and Utah who were unwittingly exposed to harmful levels of radioactive fallout from U.S. weapons testing. It exists among people who live downwind of Hanford, Washington where for years milk and other crops were contaminated in the fields of Franklin County. It exists among people who live near the Fernald, Ohio plant where neighbors of that facility have had their land and groundwater contaminated and where the Energy Department recently agreed to pay \$78 million in damages. It exists in other places and among other people as well.	
S-31-02	The point is, the narrow action under the discussion today—the restart of three aging production reactors at Savannah River Plant—must be viewed in the broader context of our national experience with nuclear weapons production and testing. That experience has taught us two things. One is that radiation releases from these activities can and do hurt people. The second is that the operators of these facilities have often failed to adequately inform and protect people who might be at risk for injury as a result of their operations. One consequence of this experience is that citizens, now more than ever, demand and deserve a more thorough and honest accounting from the Energy Department and its contractors about the nature of the environmental and public health risks from its operations. It is that accounting that I wish to address with the following three points: First, the draft EIS does not adequately portray the true extent of off-site contamination as a result of Savannah River operations. Second, the draft wrongly contends that decisions about risk from Savannah River operations are morally comparable to other	Please see the response to Comment S-03-01 on the risks to health and environmental impacts. DOE publishes an annual environmental report that informs the public of releases from SRS activities and the doses to individuals and population groups calculated to result from them (e.g., <u>Savannah River Site Environmental Report for 1988</u>, WSRC-RP-89-59-1). There is no evidence of any harm to members of the public as a result of these releases, and there is no scientific basis on which to expect such harm.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	forms of risk. Thirdly, the draft wrongly implies that future risks from Savannah River ought to be considered independent of the accumulating risk faced by populations that have been exposed to radiation from Savannah River Plant for nearly 40 years.	
	1) The draft EIS does not adequately portray the true extent of off-site contamination that results from Savannah River operations.	
S-31-03	While the draft acknowledges that people living near Savannah River Plant and drinking water drawn from the Savannah River are routinely exposed to radiation from SRP operations, relatively little information is provided describing the physical and chemical forms of the contamination and the ways in which radioactive pollution reaches affected populations. From the discussion provided in the draft EIS on this issue the reader is expected to draw the conclusion that radiation releases from Savannah River are unremarkable and insignificant. We believe a more objective and thorough examination of Savannah River releases and their accumulation in the off-site environment would show that some releases are remarkable and significant and others need to be looked at more closely.	The EIS considers the physical and chemical forms of the radioactive materials if such factors are significant in the dose evaluations. For example, tritium can be present either as tritiated water (tritium oxide) or as tritium gas, with different dose conversion factors; other nuclides can be present as particulates that are subject to deposition or as gases that are not. The presence of a radionuclide in a food substance defines its characteristic, as does its appearance in sediments of streams or rivers.
S-31-04	As a convenient reference in this regard I'm going to use data collected at DOE's Hanford facility in Washington state. Hanford is the facility in the U.S. that is most like Savannah River. Both plants have active and inactive reactors and both have active nuclear fuel reprocessing plants. Both are built on major waterways and, regrettably, both facilities use waste disposal methods that contaminate groundwater and surface water. Operations at both facilities have, over the years, resulted in off-site air, soil, and water contamination.	A comparison of SRS operations with those at the Hanford Reservation is not relevant for several reasons: Hanford has not been operated to produce tritium, as SRS has, and thus has less inventory available for potential release via leaks, etc.; the reactors at Hanford differ in design from those at SRS, and do not use heavy water (which also yields tritium as a contaminant) as a moderator; and the climatological, hydrological, and geochemical environments are totally dissimilar (Hanford is in a desert climate receiving an average of slightly more than 6 inches of rain per year; borders the Columbia River, which has a mean flow (120,000 cfs) about 12 times that of the Savannah River; and produces no nondesert vegetation except those that are planted and irrigated).
S-31-05	One major difference between Savannah River and Hanford is that Savannah River operations include the production of radioactive tritium, whereas Hanford operations produce and release tritium only as a byproduct of reactor and fuel reprocessing operations. Thus, releases of tritium at Savannah River on an annual basis are more than 100 times that magnitude of tritium releases from Hanford. Another difference between the two sites is that while a thorough assessment of historical radiation doses is underway at Hanford, no such study has yet been initiated focusing on historical releases from Savannah River Plant and the cumulative radiation doses resulting from those releases.	DOE has calculated both on- and offsite radiological doses for a 36-year period. This information is provided in Tables 3-13 and 3-14 in the EIS.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	<i>Tritium: From what we know radioactive tritium is, by far, the major contributor to off-site radiation doses from Savannah River operations. Indeed, studies indicate that Savannah River Plant releases more tritium to the environment than all other U.S. nuclear facilities combined.¹ Tritium is the most invasive of all radionuclides, capable of exposing people both via inhalation and the absorption of tritium through the skin.²</i>	
S-31-06	As Dr. Karl Z. Morgan, the former Director of the Health Physics Division at Oak Ridge National Laboratory notes in his comments submitted on this draft EIS, tritium's biological harm is much greater than radiation protection guidelines—used by the Energy Department and other federal agencies—currently acknowledge. According to Dr. Morgan, who for 20 years was chairman of the International Commission on Radiological Protection (ICRP) committee charged with setting standards for internal radiation exposure, laboratory evidence on the biological harm caused by tritium indicates that current standards understate tritium toxicity by as much as five times.³	Dr. Morgan's current views have been considered by authoritative national and international scientific committees and agencies, and have not been accepted as valid, as evidenced by the absence of change in recommendations on tritium intake.
S-31-07	In 1988, all tritium releases (to soil, surface water, and air) from Hanford were reported at just under 4,000 curies. By comparison, annual releases from a typical 1,000 MW nuclear power plant are about 830 curies.⁴ In 1988, Savannah River Plant reported the release of 479,000 curies, more than 100 times what Hanford released that year and over 500 times as much as a typical nuclear power plant.⁵	Please see the response to Comment S-31-04 on comparisons of DOE facilities.
S-31-08	The draft EIS does not well describe the degree to which tritium released from Savannah River Plant operations permeates the surrounding environment. The EIS doesn't report, for example, that in 1988 tritium in water vapor measured at the Savannah River Plant site perimeter reached levels up to 25,000 pCi/L.⁶ (By comparison the EPA drinking water standard for tritium is 20,000 pCi/L.) Other examples:	The comparison of maximum measured tritium concentrations in atmospheric moisture with annual average EPA community drinking-water standards is not correct, because that moisture is not ingested; that moisture at an average humidity of 50 percent at 75°F would produce an airborne inhaled tritium concentration of about 0.3 pCi/L, which can be compared with the DOE annual concentration guide for inhaled tritium (as water) of 100 pCi/L.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-31-09	Drinking Water: - Based on the difference between upstream and downstream measurements inflow of groundwater contaminated by Hanford discharges doubles the concentration of tritium in the Columbia River. The maximum concentration of tritium at the City of Richland's drinking water intake (just downstream of Hanford) in 1988 was 160 picocuries per liter (pCi/L). The maximum concentration at the Beaufort-Jasper water treatment plant in 1988 was 3,980 pCi/L or 25 times higher.⁷ - The Environmental Protection Agency regularly collects and publishes data on tritium concentrations in U.S. drinking water supplies. From quarterly data collected in 1988, EPA published 301 entries or about 75 entries each quarter. Of those 301 samples, 283 or 94% had tritium concentrations at or below 300 picocuries per liter.⁸ The highest level of tritium in drinking water reported by the EPA from 1988 was 2,300 pCi/L from a sample reportedly collected at Savannah, Georgia.⁹ I'm told that the City of Savannah no longer draws domestic water from the Savannah River but that industrial users in the Savannah area do use water drawn from the river through the Port Wentworth water plant. Rainwater: Each month the EPA gathers rainwater samples at 40 to 50 locations around the United States. In 1988 they reported results from 495 samples.¹⁰ Of those 495 samples only 10 samples were measured at concentrations of 500 picocuries per liter (pCi/L) or more. Of those 10 samples at or exceeding 500 pCi/L, five of them were gathered at Barnwell, South Carolina. Two were collected in Columbia, South Carolina and one in Charlotte, North Carolina. (One each was collected a Niagara Falls, New York and Idaho Falls, Idaho.)¹¹ The highest concentration EPA sampled in 1988 came from Barnwell and registered 2,100 pCi/L. Savannah River Plant does not publicly report tritium concentrations in rainwater in the area that lies between the plant perimeter and the 100 miles radius. In rain samples collected by SRP at the plant boundary in 1988, however, tritium concentrations in rainwater averaged 1,700 pCi/L with readings as high as 6,700 pCi/L.¹² In 1987 one rainwater sample at the site boundary registered 85,000 pCi/L. The average concentration of tritium in rainwater at the site boundary during 1987 was reported at 4,600 pCi/L.¹³	Except where it provides specific responses, DOE believes that the following comments are anecdotal, and are either irrelevant to the analyses of impacts provided in the EIS, or are extracted from the environmental information sources used to prepare (and already referenced in) the EIS. Also, please see the responses to Comments S-03-01 on risks to health and environmental impacts, S-05-14 on exposure limits, and S-31-04 on comparisons of DOE sites.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	The Georgia Department of Natural Resources does sample rainwater in Georgia locations beyond the Savannah River Plant boundary but within the 100 mile radius. From 1985 to 1987 tritium concentrations in rainwater near Savannah River Plant were regularly measured in the thousands of picocuries per liter. Six samples exceeded 10,000 pCi/L.¹⁴	
	Surface Water: Sampling reported by SRP for 1988 record levels of tritium in Savannah River water averaging between 1,000 and 3,400 pCi/L with peaks ranging up to 11,000 pCi/L. Moreover, tritium contribution to rainfall around Savannah River Plant appears to have affected water quality in South Carolina's Edisto River which the SRP environmental team uses as a control comparison for judging SRP contamination of the Savannah River. In 1988, according to SRP reports, tritium concentrations in the Edisto averaged 330 picocuries per liter with a maximum value of 750 picocuries per liter. In 1987, tritium concentrations in the Edisto River averaged 410 pCi/L, with a maximum reported value of 940 pCi/L.¹⁵	
S-31-10	By comparison the average concentration of tritium in Columbia River water downstream of Hanford in 1988 (even after receiving substantial tritium inflow from Hanford groundwater) was 132 pCi/L with a maximum reading of 160 pCi/L.¹⁶ It's also instructive to compare the levels of tritium found in the Edisto with those measured in Georgia's Altamaha River near the Edwin Hatch nuclear plant in southern Georgia. The most recent data published by the Georgia Department of Natural Resources report that of 47 upstream samples collected from the Altamaha between December 1984 and December 1987, none exceeded 300 pCi/L.¹⁷ Of 45 samples collected at a sampling point four miles downstream of the Hatch nuclear plant, one measured 500 pCi/L, another measured 300 pCi/L, and the rest were less than 300 pCi/L.¹⁸ And yet, tritium levels in the Edisto River average well over 300 pCi/L with peaks near 1,000 pCi/L. This clearly suggests that tritium from Savannah River Plant is contaminating the Edisto watershed as well. Milk: Environmental monitoring by SRP contractors and the State of Georgia offer clear evidence that tritium is also present in elevated levels in milk collected from dairies near Savannah River Plant. While other Federal researchers say that people in the U.S. should expect tritium levels in milk at between 100 and 500 pCi/L, concentrations of tritium in milk samples from dairies near	Please see the response to Comment S-31-04 on comparisons of DOE facilities.

C-437

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	Savannah River Plant regularly return readings well in excess of 1,000 pCi/L. ¹⁹	
	Strontium-89,90 in Milk: Reported analyses of milk samples over the years also offer strong indications that radioactive strontium (SR-89,90) released from Savannah River facilities is periodically contaminating milk from farms near the plant.	
	National data reported by EPA for 1988 (the most recent year for which data are published) show that average levels of strontium-89/90 in milk sampled throughout the United States run between .4 and 2.6 pCi/L. ²⁰ In July of 1988, EPA analyzed milk in 54 North American cities for levels of Sr-89,90. The average concentration was 1.7 pCi/L with the highest level reported at 4 pCi/L.	
C-438 S-31-11	According to the 1988 Savannah River environmental report, average concentrations of Sr-90 in milk produced from dairies near Savannah River ranged between 2.3 and 4.8 pCi/L. ²¹ The maximum level reported was 9.1 pCi/L Sr-90, which (for comparison purposes) exceeds the EPA safe drinking water standard for Sr-90 of 8 pCi/L. It is also higher by a factor of 4 than the highest recorded concentration of Sr-90 in milk collected near the Hanford facility in 1988. ²²	EPA maximum contaminant levels (MCLs) for drinking water are <u>annual average</u> values (40 CFR 141.16); comparison of <u>maximum</u> values for other media (such as milk) to annual average MCLs for drinking water is invalid.
	A review of past environmental reports dating back several years offers more evidence implicating SRP as the source for relatively high levels of Sr-89,90 in milk collected from dairies near the plant. For many years SRP environmental reports have included milk samples from a major milk distributor located west of Augusta, Georgia and just beyond the 25 mile radius from the plant. The Savannah River environmental team includes sampling results from the distributorship as a control on milk sampled within the 25 mile radius. The attached graph plots maximum recorded values of Sr-90 in milk sampled since 1970 from dairies within 25 miles of SRP and from milk sampled at the major milk distributorship west of Augusta, Georgia.	
	A review of records since 1976 shows that in each year the highest Sr-89,90 values have come from milk sampled within the 25-mile radius and that the maximum value measured is invariably double or more the maximum value reported from milk gathered from	

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	the distributorship outside the 25-mile radius. Since 1980, environmental records published by SRP record 17 milk samples where Sr-89,90 concentrations exceeded the EPA drinking water concentration of 8 pCi/L. All 17 of these samples were gathered within the 25-mile radius of SRP. At the same time, this does not rule out the possibility that milk sampled at the major distributorship west of Augusta is not itself affected by fallout from Savannah River Plant. The average concentration of Sr-89,90 in milk sampled at the Augusta distributorship in (4.7 pCi/L) is more than double the average concentration of Sr-89,90 that EPA measured in the southeast region during 1988. Strontium-90 in Vegetation: From data reported in 1988 environmental monitoring reports levels of strontium-90 in vegetation collected on and near the Savannah River River Plant are between 10 and 100 times greater than levels of strontium-90 collected near the Hanford facility in Washington state.²³ As with milk the data indicate a strong relationship between high levels of strontium-90 and proximity to SRP.	
S-31-12	Inconsistencies and Omissions: Generally, the EIS does not adequately provide the parameters and assumptions involved in calculating radiation doses from Savannah River operations. Although doses are reported for liquid and atmospheric pathways the EIS provides very little information on the release and transport of specific radionuclides such as tritium, cobalt-60, strontium-90, cesium-137, plutonium-238, plutonium-239, carbon-14 and iodine-129. There's simply no way that an independent health physicist reviewing this document could properly evaluate the table on page 4-33 of the EIS (which provides calculated doses for maximum individuals and the regional population) without such information. For example: to my knowledge Savannah River Plant has never seriously considered that elevated levels of strontium-90 in milk and vegetation around SRP result from Savannah River operations. The thinking is that it's better to rely on source measurements with environmental modeling rather than to put much stock in the environmental measurements themselves. By this logic, the strontium-90 in the milk is apparently dismissed as resulting from atmospheric fallout from nuclear weapons testing and not factored	Section 4.1.2 of the EIS describes and presents tabulations of the expected annual releases of radionuclides to the atmosphere and to surface and subsurface waters of the SRS. Chapter 3 presents environmental data needed to assess transport, and Section 4.1.2 identifies the NRC codes used to calculate the doses, as does an EIS reference that contains details of the dose methodology and assumptions.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-31-13	into the radiation doses attributed to SRP. However, if one assumes that the continued pattern of high strontium-90 in milk collected near SRP is related to emissions from the plant a different picture would emerge. Given that drinking a half gallon a day of milk containing 8 or more pCi/L will inflict a radiation dose of about 4 mrem/y it is hard to square this with the calculated "maximum" annual dose of less than .6 mrem/y from all SRP radionuclides received via all pathways.	The 50-year effective dose commitment from ingestion of strontium-90 in milk at the reported 1988 average concentration of 3.6 pCi/L, using the NRC values for milk intake, would be about 0.052 mrem.
S-31-14	Cesium-137: The fate of cesium-137 is not adequately discussed. While the EIS acknowledges on page 4-28 that Savannah River discharges and run-off account for a four-fold increase in the concentration between upstream and downstream water in the Savannah River, and that this contribution results in a .28 mrem dose to the "maximum" exposed individuals, it fails to adequately discuss the assumptions used to calculate this exposure, such as the assumed concentration of cesium-137 in drinking water and amount consumed. The same holds for fish consumption and other factors. If one looks more closely at fish, for example, one can easily arrive at conditions—using SRP data—where exposure would be greater than .28 mrem. Numerous studies show that fish concentrate radioactive cesium in their muscle tissue. For example, Columbia River bass sampled at Hanford in 1988 were measured as having an average concentration of 53 pCi/kg in muscle tissue, a concentration several orders of magnitude greater than the concentration of cesium-137 measured in Columbia River water. Bass caught in the Savannah River adjacent to SRP during 1988 were reported to have concentrations of Cs-137 in their bodies ranging from 120 to 1,200 pCi/kg,²⁴ also several orders of magnitude greater concentration than Cs-137 in Savannah River water. (As an aside, it is important to point out that how one measures radioactivity in fish is important because what one is obviously interested in is the part of the fish that a person would eat—the muscle. According to Savannah River Ecology Lab studies, Largemouth bass accumulate cesium-137 in their muscle at levels 50% higher than what one would find if the whole fish (including muscle) were assayed.²⁵ In 1988, the Savannah River environmental team chose to look at flesh (muscle) when measuring for gross activity (gross alpha and nonvolatile betas) but used the whole fish when	Please see the response to Comment S-31-12 on radiation doses. DOE considers analysis of the whole fish to be conservative, because bone-seeking radionuclides, especially strontium-90, would be constituents of the overall measurement.

Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response

measuring for cesium-137, the radionuclide of most concern.²⁶ Obviously, this results in a considerable under-reporting of the actual concentrations of cesium-137 present in fish flesh).

If nothing else, the above mentioned SREL study emphasizes the importance of looking. The study found that largemouth bass accumulate Cs-137 in their muscle at concentrations roughly 2.5 times that assumed by a Nuclear Regulatory Commission (NRC) computer code. It also reports that a largemouth bass caught in the lower part of Steel Creek—within easy swimming distance of the Savannah River itself—had measured concentrations of 20,100 pCi/kg in its muscle, almost 20 times the maximum concentration measured by sampling the whole body of one of only five bass collected in 1988 in the Savannah River adjacent to SRP. A 1972 study conducted by scientists from Emory University reported levels of cesium-137 in largemouth bass of 100,000 pCi/kg in creeks feeding the Savannah River.²⁷ Several largemouth bass collected from the Savannah River by the Georgia Department of Natural Resources in recent years have contained concentrations of cesium-137 in excess of 5,000 pCi/kg, including one measured at 22,000 pCi/kg.²⁸

The validity of the remarkably low "maximum" individual dose (which includes radiocesium) of .5773 mrem/y reported on page 4-33 of the EIS is even undermined, ironically, by a calculation provided in the 1988 SRP environmental report. The authors of this report assume that a person consumes 25 pounds/year of Savannah River fish containing a concentration of 3,400 pCi/kg.²⁹ The calculated radiation dose is just under 2 mrem—more than 3 times the calculation contained in the EIS for all exposures, from all pathways, to a maximally exposed individual. Obviously, if the unlucky fisherman were to consume, say, 50 lbs. of bass, one or two of which happen to be visiting the river from their usual haunts on Steel Creek or Lower Three Runs Creek, then the radiation dose could in fact be several times higher—just from cesium-137 in bass tissue.

The value of 3,400 pCi/kg represents the maximum concentration detected (in a single eel) in any of the 210 fish sampled. The maximum measured in a bass sampled adjacent to the Site was 1,200 pCi/kg (average of 490 pCi/kg). Of the 52 fish caught immediately adjacent to the Site, the average concentration of cesium-137 was about 350 pCi/kg, and the average concentration of cesium-137 in all fish sampled from the Savannah River at or below the SRS was about 300 pCi/kg (Savannah River Site Environmental Report for 1988, WSRC-RP-89-59-1). The consumption of 25 pounds in a year of eels at the maximum concentration measured in 1988 is considered unreasonable, even for the "maximum individual."

Plutonium 238,239: There is also a lack of discussion about the fate of plutonium-238 and plutonium-239 released by the

The potential for exposure to plutonium is assessed by means of the airborne activity monitoring program

C-441

S-31-15

S-31-16

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
C-442	reprocessing of reactor fuels at Savannah River. The fact that releases of plutonium-238 and plutonium-239 from SRP were resulting in measureable levels of plutonium in the offsite environment was documented from a 1975 survey conducted by researchers at the Savannah River Ecology Lab.³⁰ This phenomenon appears to be continuing. Here again, comparison with Hanford is worthwhile. Studies done at Hanford have also shown that plutonium from Hanford reprocessing facilities is discernible in soil samples gathered offsite. In 1988 reported releases of plutonium-238 and plutonium-239 at Savannah River were 20 and 3 times higher respectively than releases from Hanford reprocessing facilities. Straightforward comparisons of plutonium isotopes in air between Savannah River and Hanford out to 25 miles away from the facilities show levels at Savannah River several times greater than those measured at and around Hanford.	and the doses to members of the public calculated to result from these releases. The average and maximum individual doses are reported in the Annual Environmental Reports; in 1988, the maximum dose from these nuclides was about 0.005 mrem (<u>Savannah River Site Environmental Report for 1988, WSRC-RP-89-59-1</u>).
	Unfortunately, it does not appear as though any program has existed or exists now at Savannah River to assess the exposure (via inhalation of respirable plutonium particles into lungs and/or deposition in bone) to the off-site population as a result of these discharges.	
S-31-17	Iodine-129, Carbon-14: Iodine 129 (half-life 16 million years) an extremely long-lived radionuclide which concentrates in the human thyroid gland is reported to be the second largest contributor (after tritium) to off-site radiation doses attributable to Savannah River air emissions.³¹ Yet, there is no program at Savannah River that regularly assesses the fate of I-129 in the environment from SRP and its concentration in the environment relative to reported releases.	Please see the response to Comment S-31-16 on plutonium. Concentrations of iodine-129 are too small to be detected in the air sampling program; in 1988, the maximum individual dose from this nuclide was calculated to be 0.065 mrem (WSRC, 1989).
S-31-18	Carbon-14 is another long-lived radionuclide (half-life 5,730 years) that is released in great amounts from SRP (24 Ci/year versus 5 Ci at Hanford in 1988) but which is not monitored adequately in the environment. One would expect, given the relatively large amounts of carbon-14 released (the draft EIS forecasts annual releases of just under 70 Ci with restart of the P, K, and L reactors) that monitoring for it would receive a high priority. Yet—as with I-129—the most recent environmental report for SRP fails to report levels of C-14 in milk, food, drinking water, fish and other aquatic organisms, mammals, rainwater, soil, vegetation, or air.	See the response to Comment S-31-16 on plutonium. Concentrations of carbon-14 are too small to be detected in the air sampling program; in 1988, the maximum individual dose from this nuclide was calculated to be 0.014 mrem (WSRC, 1989).

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	Finally, it is clear that estimates in the draft EIS are primarily built on assumptions loaded into a computer model. Yet, clearly, annual radiation release records and projections are insufficient without an environmental monitoring program which can serve to audit predictions rendered by computer models for environmental concentrations and human exposure. Former Savannah River Plant waste manager Bill Lawless has testified that a 1982 test of atmospheric dispersion from a release of radioactive krypton gas at Savannah River Plant resulted in the finding—contrary to what the models predicted—that the radioactive plume was still intact as it passed over Fayetteville, North Carolina some 200 miles downwind of the release point.³² The point is not only that the 80 kilometer (50 miles) radius used in the EIS is arbitrary but does not in any sense bound the radiological impact on the environment from Savannah River operations. As noted above tritium rain-out may be significantly affecting the quality of surface waters along a path that includes Columbia, S.C. a major population center which lies just beyond the 80 km radius. To our knowledge Savannah River Plant has yet to do a thorough study of concentrations of radioactive tritium to assess concentrations of tritium in rainfall at various distances beyond the Savannah River boundary.	
S-31-19	2) The draft wrongly contends that risks from Savannah River operations are morally comparable to other forms of personal and population risks. On page 3-47 of the draft EIS it is stated: "The release of radioactivity to the environment from any nuclear facility is a significant and sensitive issue for onsite workers and the public. Because there are many other sources of radiation in the human environment, it is important to evaluate radioactive releases from nuclear facilities in the context of all ionizing radiation to which people are routinely exposed." (emphasis added) The text then goes on to compare radiation released from SRP to radiation that already exists in the environment. Also on page 4-121 the draft gives us a prosaic presentation of "Common Risks" complete with a table that includes things like being a race car driver, drinking two beers a day, living with a smoker, taking one airplane flight a year, skydiving, and eating one charcoaled steak.	The EIS does not make moral comparisons of various forms of risk. The purpose of the comparison of SRS radiation with background radiation is merely to provide the public with a natural "yardstick" for perspective.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-31-20	Although the table does include an estimate of lifetime risk associated with living near a nuclear reactor, the implied comparison is irrelevant when one considers how much more radiation is routinely released to the environment from a large, unlicensed nuclear weapons complex like Savannah River Plant as compared to the relatively modest radiation discharges of a commercial power reactor.	Individual doses from SRS operations meet the same NRC criteria for maintaining effluents as low as reasonably achievable (10 CFR 50, Appendix I), as do commercial nuclear powerplants.
S-31-21	Moreover, all the examples provided—including the comparisons to natural radiation and other sources of radiation—have one thing in common: Savannah River operations are not responsible for them. Savannah River operations are responsible for the radioactivity and other contaminants they put into the environment. Mother Nature, however dangerous she can be at times, is incapable of moral acts. It is true that cosmic rays, radon gas, and the presence of naturally occurring radionuclides do exist in the environment. It is also true, as epidemiologist Dr. Alice Stewart's work in England has shown, that there is a correlation between "background" radioactivity and cancer incidence, just as science predicts there should be. The difference is that natural radiation has nothing at all to do with the vital public policy question that this draft EIS is supposed to address.	A correlation of natural background dose rates and gross cancer mortality rates in the United States on a state-by-state basis indicates an inverse relationship; that is, as natural background rates increase, gross cancer mortality rates decline.
S-31-22	In the opinion of this reviewer the "importance" that the authors of the EIS attach to comparing SRP radiation with background radiation has only to do with a public relations exercise. It is a convenient juxtaposition which, in this context, evades the central point—a decision to go ahead with reactor restart at Savannah River involves a conscious decision to add to the radiation exposure and health risk of the people who'll be exposed. The only technical weight to the presentation is that whatever the health damage caused by future SRP radiation releases it will be very difficult (barring an accident like the one at Chernobyl) to discern SRP induced cancers and birth defects from those caused by background radiation or other environmental factors. That's the only "importance" of such a comparison. The point is, even if the harm is not "observable" in the light of other causes, this does not release the decision-makers and the operators of Savannah River Plant from the responsibility for that harm. One final note, it is inappropriate in this EIS—which involves a decision on whether or not SRP reactors should resume operating to produce tritium and plutonium for nuclear weapons and other	The comment correctly observes that the health damage, if any, resulting from continued SRS operations will be undiscernable. SRS will continue its efforts to reduce its releases even further as technology and economics permit. Also, see the response to Comment S-05-07 on the Chernobyl accident and SRS reactors.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-31-23	applications—to add the radioactive contribution from the Vogtle Electric Generating Plant (VEGP) to those of SRP. The risk benefit equations for nuclear weapons and nuclear power have vastly different political and moral qualities. To add the two together obscures rather than clarifies the issues of public policy involved with the proposed restart of the SRP reactors. Indeed, one could argue that the better comparison would have been to distinguish Vogtle's radiation contribution (due to nuclear electricity production) from that of Savannah River weapons material production and the radioactive fallout from nuclear weapons testing (which after contains Savannah River produced material coming back to visit the area in the form of long-lived actinides and fission products).	Council of Environmental Quality guidance (40 CFR 1500-1508) requires DOE to evaluate the cumulative effects of the operation of similar facilities on the environment and the public health.
S-31-24	3) The draft fails to acknowledge that the risks posed by future operations at Savannah River cannot be separated from the accumulating risk to people who've been exposed to radiation releases from Savannah River for over three decades.	Please see the response to Comment S-03-01 on health risk.
S-31-25	A significant omission in the draft EIS discussion of radiation risk is a discussion of radiation doses received to date to the off-site population as a result of Savannah River operations. What science tells us about low-level radiation is that it has a cumulative effect in so far as risk is concerned.	Please see the response to Comment S-11-01 on cumulative impacts from past and present operation at SRS.
S-31-26	An example would be the unlucky fisherman who is fond of largemouth bass he happens to catch in the Savannah River near Savannah River Plant. The cesium-137 he ingests through eating the flesh of a fish he catches next year will be added to the cesium-137 retained in his body from past consumption of fish. Moreover, for the purposes of figuring his risk of cancer, the radiation dose he receives from future dining on these fish will be added to the radiation dose he has already received from cesium-137 in his body—a portion of which is eliminated over time. The same is true of all other radionuclides released from SRP including even those like krypton-85 (half-life 10.7 years) and argon-41 which, though not readily absorbed into the body, do inflict a radiation dose to the whole body. There is, in a sense, an existing bank (ideally measureable in terms of individual as well as whole population dose) of radiation exposure that long-term residents of the Central Savannah River Area and others further downwind have received as a result of more than 35 years of Savannah River Plant operations.	Cesium-137 has a biological half-life in the body of about 110 days. One year after its ingestion, only about 10 percent of the original cesium-137 would remain in the body; after 2 years, 1 percent would remain.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	A useful analogy is to a person who has been living with a smoker for 35 years. If you were to try to estimate that person's risk of disease from living with the smoker it would be a highly misleading assumption to consider only the exposure to smoke received from now on. Obviously, a more appropriate assessment of risk would begin with the fact that the person has been breathing second hand smoke for 35 years. The same is true in trying to assess radiation risk attributable to living near or downstream from Savannah River Plant.	
S-31-27	Unfortunately, a thorough dose reconstruction effort to assess the collective dose received to the off-site population has not yet been attempted at Savannah River. What is attempted, instead, is the misleading exercise of trying to predict health risks based on single year emissions (the method employed in each year's environmental monitoring report from SRP) or, as in the case of this draft EIS, to try to calculate it on the assumption that everybody starts with a clean slate of exposure upon the date the proposed action—reactor restart—occurs.	Please see the response to Comment S-03-01 on health effects from past and continuing operations at SRS.
S-31-28	A dose reconstruction effort of the sort required is underway at the Hanford Nuclear Reservation. Moreover, the recent recommendations of the Secretarial Panel for the Evaluation of Epidemiologic Research Activities (SPEERA) offer a new mandate for projects like dose reconstruction to proceed in an open and independent manner at other U.S. DOE facilities like SRP. Only when such a study is completed will people who live downwind and downstream from Savannah River have at least a better chance of knowing what the cumulative risks really are. The very fact that no such information exists today from a credible source undermines the credibility of the draft EIS, thus complicating the issue of whether the SRP reactors and their support facilities should be operated in the future.	The dose reconstruction effort underway at the Hanford Reservation is directed at a limited period of time early in that plant's operating history during which releases were much higher than any made subsequently. SRS has no such early history, as indicated in Section 3.7 (Tables 3-13 and 3-14). Appendix B of the EIS discusses epidemiological studies.
	4) Additional Comments:	
S-31-29	A) P. 1-3 <u>"The current NWSM, which was approved by President Reagan on January 19, 1989 authorizes weapon builds and retirements through Fiscal Year 1994. It also provides a projection of material requirements for the FY 1995-1999 period. Issuance of the 1990-1995 NWSM has been delayed, but is expected in the near future."</u>	See the response to Comment S-03-03 on the need for tritium, and the new NWSM.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	Obviously the current Nuclear Weapons Stockpile Memorandum that is driving the "need" for reactor restart is obsolete. It should be considered invalid as the basis for moving ahead with any urgency on SRP reactor restart. Moreover, there is no longer (if there ever was) any rational basis for a classified appendix on the need for nuclear materials production. This practice is not necessary for national security and undermines our system of public accountability for government decisionmaking.	
S-31-30	B) P. 2-4 of the draft defines the "no action" alternative as restart of the SRP reactors. This is nonsense.	Section 2.1 and the Summary of the EIS define the no-action alternative as continued operation, not restart.
S-31-31	C) P. 2-16 <u>"The following projects and evaluations to enhance overall fire protection are planned for completion at each reactor before the resumption of production: *Completion of a safe shutdown analysis that will demonstrate reactor safe shutdown capability from any single credible fire."</u> The use of scientific analysis to purposely demonstrate anything is simply wrong-headed. The analysis should test the system, period, not be part of the plan to functionally acquire safe shutdown capability. DOE science has always been clouded by the political need to demonstrate things that are often unavailable through objective inquiry and analysis. This is one of the reasons the agency has a credibility problem that is probably unredeemable.	The terms used in this description are those defined in NRC fire protection requirements (10 CFR 50, Appendix R).
S-31-32	D) P. 2-26 <u>"Periodic purging of the disassembly-basin water is necessary to reduce the radiation exposure to operating personnel from the accumulation of radioactive contaminants, particularly tritium, which is not removed by the basin water purification system....DOE has advised the South Carolina Department of Health and Environmental Control (SCDHEC) that the SRS intends to apply for National Pollution Discharge Elimination System (NPDES) permits for discharge of disassembly basin purge water."</u> The problem here is that SRP is long overdue in finding a solution to the use of seepage basins for the disposal of radioactively contaminated liquids. Federal orders to eliminate the discharge of liquid radioactive waste to the ground date back to 1973 (AEC 0511, supplanted by DOE 5820.2 in 1984) and yet SRP still has not developed a way to remove tritium from disassembly basin water that is purged to a seepage basin. Now, for some reason, the	Please see the responses to Comments S-06-03 and S-06-05 on the levels of tritium in the Savannah River. Section 4.5.3 of the EIS discusses options for tritium removal.

Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response

solution to the problem is actually to make it worse. Rather than discharging the tritium-contaminated water to a seepage basin, the proposal offered in this EIS is to discharge it directly to a surface stream thus increasing the amount of tritium released to the off-site environment by 5,400 Curies per year or nearly 50%.³³

This may be an ingenious way to come into compliance (finally) with 5820.2 but clearly the intent of the order was for treatment systems other than soil disposal that would lessen rather than increase the radiation exposure to the public. What, then, is the justification for the proposed direct discharge?

The fact is both practices (seepage basin use and direct discharge) are wrong and should be eliminated. One purpose of this EIS should have been to consider alternatives to seepage basin use that do not include adding to the radiation dose to be received by workers and the public.

S-31-33

E) P. 2-52, "DOE will complete the first major portion of the PRA before the resumption of production" and An experimental program is under way, but is not planned for completion before the resumption of production; its purpose is to develop more information about elements of severe accident behavior that are specific to the SRS reactors."

The Severe Accident Assessment Program is a long-term research effort similar to the continuing research programs being conducted by the nuclear power industry.

DOE should have completed these analyses before issuing a draft Environmental Impact Statement on restart.

S-31-34

F) P. 4-19, "Contaminants that might reach groundwater beneath the SRS would not reach offsite sources."

This is obviously not true as applies to drinking water. As the EIS itself documents, part of the radiation dose received by downstream users comes from groundwater that is contaminated from SRP operations and which migrates to surface streams feeding the Savannah River. As for contamination moving offsite to groundwater sources of drinking water, there has been concern (since the 1987 document referenced) that contamination from the SRP M-Area is indeed migrating toward offsite wells.

In response to this comment, the statement in Section 4.1.2 has been corrected to note that no radiological contaminants in groundwater beneath SRS would reach offsite groundwater sources. Nonradioactive groundwater contamination in M-Area is being controlled by pumping and removal as part of a remediation program.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
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References

¹Based on annual reported releases of tritium from Savannah River (479,000 curies in 1988, the most recent year for which records are available) and studies of releases from U.S. nuclear reactors as reported in National Council on Radiation Protection and Measurements (NCRP) Report No. 62, "Tritium in the Environment."

²NCRP = 62, p. 45

³Dr. Karl Z. Morgan, Comments on the May 1990 Draft Environmental Impact Statement Regarding Operation of the K, L, and P Reactors at Savannah River Plant, p.8.

⁴NCRP Report No. 62, p. 12. Figure is for a pressurized water reactor using boric acid in moderator. For a typical boiling water reactor the tritium release is about 63 Ci/yr.

⁵Although Hanford does not deliberately produce tritium in the way that Savannah River does, substantial amounts of tritium are released to the atmosphere during nuclear fuel reprocessing at the Hanford PUREX. In addition groundwater contamination from liquid discharges to soil from both fuel reprocessing and reactor operations flows into the Columbia River where it increases tritium concentrations in the river by about 100%.

⁶WSRC-RP-89-59-1, Savannah River Site Environmental Report for 1988, Vol. 2, p. 33.

⁷Hanford-Savannah River comparisons are drawn from data published in WSRC-RP-89-59-1, Savannah River Site Environmental Report for 1988, and PNL-6825 Hanford Site Environmental Report for Calendar Year 1988.

⁸Environmental Radiation Data Reports 53, 54, 55, and 56 published between September 1988 and June 1989. U.S. Environmental Protection Agency, Office of Radiation Programs.

⁹EPA 520/5-89-011, Environmental Radiation Data, Report 55, U.S. Environmental Protection Agency, Office of Radiation Programs, March 1989. Page 24.

¹⁰Environmental Radiation Data Reports 53, 54, 55, and 56 published between September 1988 and June 1989. U.S. Environmental Protection Agency, Office of Radiation Programs. Measurements of tritium in rainwater are slightly higher in tritium concentrations than drinking water. This is probably due to the fact that drinking water even from lakes and rivers includes water that comes from deep aquifers where it is less vulnerable to contamination.

¹¹Idaho Falls is the headquarters for the Department of Energy's Idaho National Engineering Laboratory, home to a large nuclear fuels reprocessing plant.

¹²WSRC-RP-89-59-1, Savannah River Site Environmental Report for 1988, Vol. 2, p. 490.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	¹³ <u>DPSPU-88-30-1, Savannah River Plant Environmental Report for 1987, Vol. 2, p. 381.</u>	
	¹⁴ <u>Georgia Department of Natural Resources Environmental Protection Division, Environmental Radiation Surveillance Report 1985-1987, p. C-19-22.</u>	
	¹⁵ <u>DPSPU-88-30-1, Savannah River Plant Environmental Report for 1987, Vol. 2, p. 99.</u>	
	¹⁶ <u>WSRC-RP-89-59-1, Savannah River Site Environmental Report for 1988, Vol. 2, p. 61 and PNL-6825 Hanford Site Environmental Report for Calendar Year 1988, p. C.8.</u>	
	¹⁷ <u>Georgia Department of Natural Resources Environmental Protection Division, Environmental Radiation Surveillance Report 1985-1987, p. A-14.</u>	
	¹⁸ <u>IBID, p. A-15.</u>	
	¹⁹ <u>J.C. Drobinski, Jr., P.J. Magno and A.S. Goldin, U.S. Department of Health Education and Welfare, Plutonium, Tritium and Carbon-14 in Man and the Biosphere. And WSRC-RP-89-59-1, Savannah River Site Environmental Report for 1988, Vol. 2, p. 452. And Georgia Department of Natural Resources Environmental Protection Division, Environmental Radiation Surveillance Report 1985-1987, p. C-16-18.</u>	
	²⁰ <u>EPA Reports 53-56 report composite values of samples by the ten EPA regions except in Report #55 which reports values collected from milk samples in 54 cities nationwide.</u>	
	²¹ <u>WSRC-RP-89-59-1, Savannah River Site Environmental Report for 1988, Vol. 2, p. 452.</u>	
	²² <u>PNL-6825 Hanford Site Environmental Report for Calendar Year 1988, p. C.12.</u>	
	²³ <u>Results compared are from WSRC-RP-89-59-1, Savannah River Site Environmental Report for 1988, Vol. 2, p. 453 and PNL-6825 Hanford Site Environmental Report for Calendar Year 1988, p. C.13.</u>	
	²⁴ <u>WSRC-RP-89-59-1, Savannah River Site Environmental Report for 1988, Vol. 2, p. 474.</u>	
	²⁵ <u>Cs-137 Concentration Factor for Savannah River Fish, J.B. Gladden memo to M.H. Smith, Savannah River Ecology Lab, February 12, 1982, Table 2.</u>	
	²⁶ <u>WSRC-RP-89-59-1, Savannah River Site Environmental Report for 1988, Vol. 2, Table 7-1.</u>	
	²⁷ <u>Cesium-137 Dynamics Within A Reactor Effluent Stream in South Carolina, Donald J. Shure and Marlin R. Gottschalk, Department of Biology, Emory University.</u>	
	²⁸ <u>Georgia Department of Natural Resources Environmental Protection Division, Environmental Radiation Surveillance Report 1985-1987, p. C-12, C-13.</u>	

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
29	WSRC-RP-89-59-1, <u>Savannah River Site Environmental Report for 1988</u> , Vol. 1, p. 113.	
30	<u>Relationships Among Plutonium Contents of Soil, Vegetation and Animals Collected on and Adjacent to an Integrated Nuclear Complex in the Humid Southeastern United States of America</u> , by H.R. McLendon, O.M. Stewart, A.L. Boni, J.C. Corey, K.W. McLeod and J.E. Pinder, IAEA-SM-199/85.	
31	WSRC-RP-89-1, <u>Savannah River Site Environmental Report for 1988</u> , Vol. 1, p. 39.	
32	Testimony of William F. Lawless, January 9, 1984, Aiken, S.C.	
33	Draft EIS at page 4-26.	

Mr. Connor later submitted the attached chart as an addendum to his written comments.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
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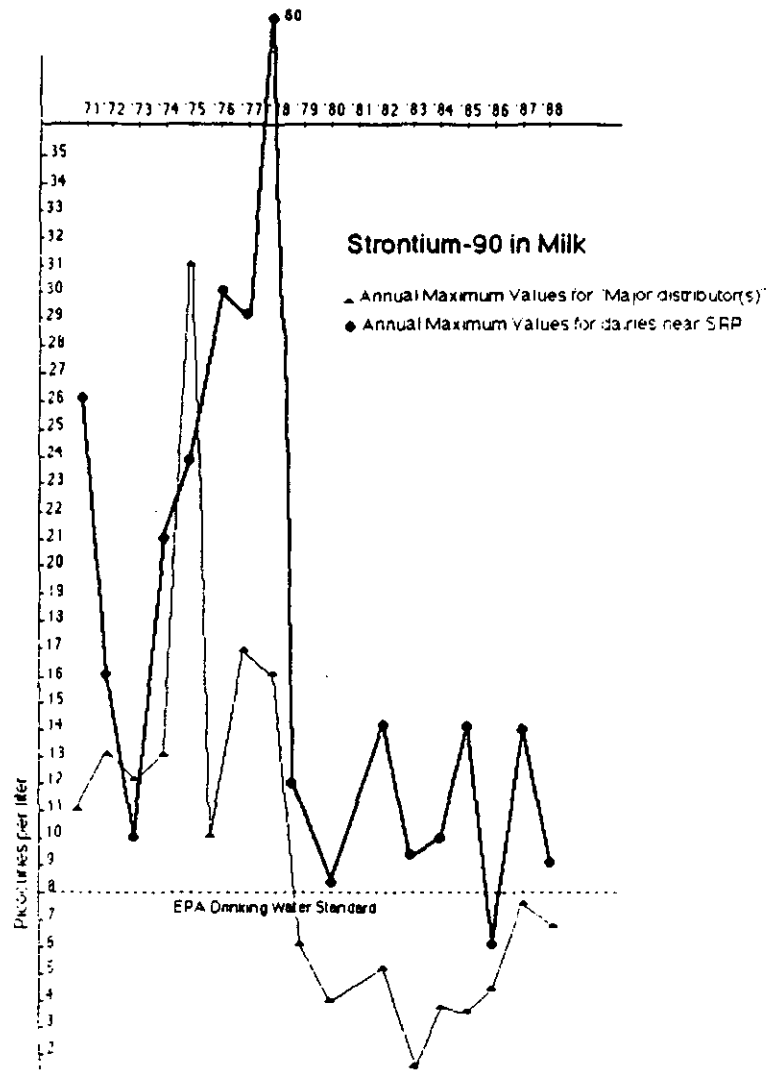
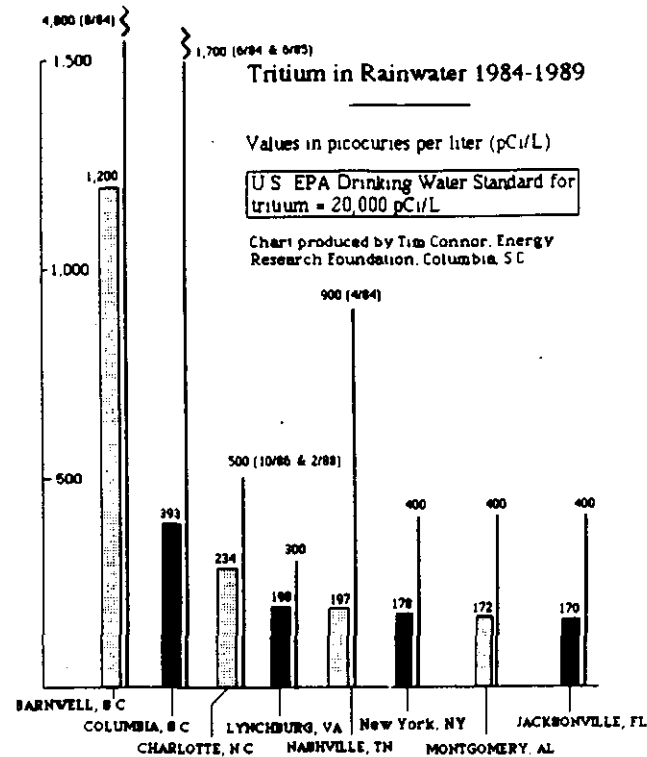


Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response



Display shows average (broad bars) and peak (narrow bars) levels of tritium in rainwater samples collected monthly in eight eastern U.S. cities from January 1984 to June of 1989. The data offer strong evidence that tritium releases from the Savannah River Plant regularly contaminate rainwater in Columbia, S.C.--more than 50 miles away--and may be responsible for higher than average levels recorded in Charlotte, N.C. To account for possible influence of the V.C. Summer nuclear plant in Fairfield County, S.C. rainwater data from 1982 & 1983 (the two years prior to Plant Summer startup) were examined. The average of 24 monthly samples collected in Columbia for those years is 500 pCi/L with a 1,200 pCi/L spike in July of 1982 (Source: EPA Environmental Radiation Reports 29-56).

Data provided the Nuclear Regulatory Commission by Plant Summer report atmospheric releases from Summer at 1.5 Ci for 1988. Airborne tritium releases from Savannah River were reported at 462,000 Ci for 1988.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-32	STATEMENT OF MOSES TODD Augusta, Georgia	
S-32-01	MR. TODD: Yes, sir. My name is Moses Todd. I am a private citizen representing myself. I reside at 2530 Gray Friar Lane in Augusta, Georgia. I am a member of Local 150, Augusta, Georgia, Plumbers and Pipe Fitters Local. I work at SRS, Savannah River Plant Site. And I'm an employee of M. K. Ferguson which is the mechanical contractor there. I would like to comment on a couple of things. One being the environmental impact of the SRS. The other is the upgrades since I've been there in two years. And I have worked at other nuclear facilities. And the need -- and I'm not an expert as far as the need goes, and the other is the social economical state of the minority community and why we are in that state. I'll start with the social economical state of the minority community. The minority community is in the condition that it is in today because the majority community is not willing to share the economical and political pie with the minority community. We can go back before big defense spending, nuclear power and the economical condition of the minority community historically has been the same. And it has kind of disturbed me that one would use this as a ploy to justify cutbacks in defense. The other area that I would like to address is the safety of SRS. I work there. I work there everyday for two years. My wife had worked there everyday going on six years. We have a 5-year old that she carried on that site 9 months. He's a healthy 5-year old. There is hunters that come up there and hunt on SRS, not just employees, but individuals that live around the plant. There is individuals that fish around the plant. There is no evidence to my knowledge, and we have heard all the figures, but we don't know what they mean, you know, the amounts of tritium. I'm no expert there, either. But I do know that there is hundreds of thousands of individuals lives around SRS, work there, live there, those that have never worked there. They retire there. They raise their families there and I'm not saying that there is not radiation there, where it come from, I'm not expert there. But I am saying is that the death rate around SRS as far as cancer deaths, et cetera, is no	Comments noted.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	greater than down river or up river or basically anywhere else to my knowledge in the southeast. You know, we were told that Chernobyl would have an effect on us here in the United States as far as rainfall go, et cetera. I don't know. I'm no expert there either. You know, if we have tritium as has been stated, then there is a possibility that some of it come from SRS. There is a possibility that some of it come from other places, like Chernobyl, like Three Mile Island.	
	I worked at Plant Vogtle at Waynesboro, Georgia, a nuclear operation. Comparing post-shutdown with commercial, probably there would be something like it, but if I'm comparing present conditions at SRS and upgrades with commercial, then I would say that we are very close to being at this point where commercial is. We don't have NRC. That's true. But we have the Atomic Energy Commission and other agencies that regulate us.	
	I would like to commend Greenpeace for its work that it has done in the area of saving the whales and other work. But somehow I feel that Greenpeace possibly is out of its league, like perhaps I am, as far as nuclear weapons go. I rely on our senior senator, Senator Sam Nunn as far as the need for nuclear capability. But I will say that common sense tells me that I should never trust communists. Common sense tells me that I should never trust approximately a billion or more Chinese over there and fold our nuclear weapons capability. Common sense tells me that we should never be in the predicament that we're in, post-dropping the bomb in World War II, where we have got to mobilize and possibly lose hundreds of thousands of men. Vietnam sense tells me, and I served in Vietnam, not in the Vietnam era, but in Vietnam, Da Nang, Cameron Bay, et cetera, that we should never put ourselves in a weak position as far as our capabilities go to defend ourselves.	
	And I would like to think of the SRS, you know the SRS symbol to stand for Start Restart. I feel that we are safe with the reactors there now. We have worked several thousand individuals for two to three years getting ready for the restart, looking at every aspect of the reactor and its operation, writing procedures and overhauling the whole operation at SRS. And, yes, some of this was done because of outside pressure from some organizations that's here today. Some of it was done because of state and federal pressures from our own state and local government and Federal government. But	

C-455

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	I feel that we are 100 percent better off today, three years later, than we were at the time that the reactors shut down. And I'm in support of the restart of the reactors at SRS until we can put the new production reactor online. Then, at that point, I would hope that we could shut down K-, L-, and P-Reactors at SRS and meet our capabilities or our needs with the new production reactor. Thank you.	

Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response

S-33

STATEMENT OF PATRICIA TOUSIGNANT
Hilton Head Island
South Carolina

MS. TOUSIGNANT: My name is Patricia Tousignant. And I live at 4 Deerfield Road, Hilton Head Island, South Carolina. I appreciate this opportunity to present my views on the scheduled restart of the Savannah River Site reactors.

I oppose the restart of these aging reactors because of a wide range of philosophical, budgetary and environmental concerns. I am heartened that there appears to be a new and intelligent approach to the Department of Energy's handling of its entire nuclear bomb complex under Energy Secretary James Watkins.

My prayer is that this is a real substantive change at the DOE, not just a cheap political rhetoric or public relations because the DOE oversees the most hazardous undertakings in the world.

Just two days ago, May 29th, 1990, the Island Packet, our newspaper on Hilton Head Island published my views on the SRS in a guest commentary column. Though I was not at home yesterday, no less than 10 people made the effort to contact me and encourage my participation today. These people represented some elected and appointed officials and also persons belonging to our Water Commission, Plan Commission, and other church and civic groups. Please be aware that they wish me to speak for them.

S-33-01

Our concerns are: (1) accountability. Our national security depends upon accountability to the public at large and oversight by our elected and appointed officials. The secretive and independent DOE has the reputation of thumbing its nose at the very people it is supposed to protect. The public perception is one of many monied and invested interests who consider weapons production as a national religious sacrament aided and abetted by an army of bureaucrats and employees whose livelihoods depend upon an ever growing scientific and military brotherhood perpetuating itself forever.

The public also considers most defenders as Dr. Strangelove types, focused on their own paranoid agendas. I realize this is unflattering to you gentlemen. Sorry.

Secretary of Energy Watkins has devised a 10-point initiative to "...chart a new course for the Department toward full accountability in the areas of environment, safety, and health. These measures are essential to demonstrate that DOE is committed to complying with the nation's environmental laws and is capable of discharging its many responsibilities which include protecting public health and safety...to help restore public credibility in the Department's ability to safely operate its unique defense, research, and test facilities...to help find a new way of successfully integrating the Department's national security

Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response

May I remind you that when our diplomats talk across summit tables with our enemies, we constantly demand "verification of any agreements." We, the public, want to know what is going on at the DOE. We feel we have no "verification" from any trusted source so that we can oversee the real state of these plants, their operations, their safety, and the environmental impact they have on everyone's personal security.

mission with its environmental restoration and compliance activities" (SEN-11-89). Also, please see the response to Comment S-01-03 on independent oversight.

We are aware that we still await the technology and understanding of how to deal with the radioactive wastes which will plague our beleaguered planet, its children, and creatures for centuries to come.

Second in our concerns, we question the mission of this project of producing more bomb-grade plutonium and tritium at a time without precedent in the history of mankind. It is a changing world. We question the menace of the byproducts and wastes which contaminate not only the plant site, but the communities surrounding them.

Please see the response to Comment S-03-03 on the need for tritium and other nuclear materials. As discussed in Section 1.2 of the EIS, when the changing geopolitical situation leads the President and the Congress to direct a reduction in weapons requirements or to stop the production of these materials, DOE will comply with those directions.

Last week, on May 23, 1990, 54 prominent Americans, including two CIA directors, a former Secretary of State, and a former Defense Secretary, plus seven Nobel Laureates also questioned President George Bush and Soviet President Mikhail Gorbachev about the mission of this project. In their letter, they asked both Presidents for a halt in the production of nuclear weapons ingredients. This letter preceded the current summit talks and the hearings on the restart of SRS for nuclear weapon fuel production. They said that nuclear missiles scrapped under the U.S./Soviet arms control agreements could provide all the ingredients the two sides might need for nuclear weapons.

I quote retired Rear Admiral Eugene J. Carroll who also wrote in the New York Times last week, quote: "A peace dividend will await the day when Americans realize that security requires fewer, not newer weapons." He continued with, "In a time of widespread budget deficits, the DOE spending for designing, testing, and producing of nuclear weapons is planned to raise \$4 billion or 35 percent to 13.9 billion from 1990 to 1995. Some peace dividend."

And may I remind you of President Dwight David Eisenhower's famous cross of iron speech in 1953. "Every gun that is made, every warship launched, every rocket fired signifies a theft from those

S-33-02

C-458

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-33-03	who hunger and are not fed, those who are cold and not clothed. The world in arms is not spending money alone. It is spending the sweat of its laborers, the genius of its scientists, the hopes of its children. This is not a way of life at all in any true sense. Under the cloud of war, it is humanity hanging on a cross of iron."	Please see the response to Comment S-02-02 on waste management and environmental restoration.
	And then he told us to, "Beware the military industrial complex."	
	Thirdly, our concern is for the environment. The population has grown up and become aware of its responsibility and stewardship of the earth and its resources. People everywhere want to hand their children and grandchildren a planet in a healthy state, but week after week little bits of information about the DOE's operations, mismanagement, and pollution of many of its 17 sites dribbles out to the public. We are aware of the DOE memo inadvertently sent to all the states' governors' offices this March describing various problems at the nuclear complex.	
	We are aware of your own memo, your own memo referred to widespread low level contamination at the Savannah River Site and of live wires posing an imminent danger.	
	We are aware that the FBI had to fly over Rocky Flats at night to take infrared photos to ascertain illegal activity on that site. We are aware of the plutonium contamination at that plant and of Fernault's pollution of the countryside and of Hanford's problems in Washington.	
	We are aware of conflicts of interests and fudged public health and risk analyses. We are aware of the 4.17 billion budgeted for Savannah River Site clean-up in just the next 5 years and the \$130 billion needed nationwide for a clean-up.	
	We are aware of the unauthorized radioactive gas releases and water releases. We are aware of radioactive substances found in the Savannah River and its silt 100 miles downstream.	
	We are aware of the seismic fault which runs through the Savannah River Site and what a moderate earthquake might do.	

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	We are aware of the power of hurricanes and tornadoes in the wake of recent brush with Hugo. We are also aware of mankind's deceptions and self-delusions. We are wary when officials tell us to "trust" them. The DOE's bank account on truthfulness is sadly overdrawn. It has the veracity quotient of a Savings and Loan official and your expenditures might dwarf their massive bailout.	
S-33-04	Fourthly, I will conclude with Hilton Head Island's specific concerns. Hilton Head Island lies 90 miles southeast of the plant site. The prevailing northwesterly winds will and have carried emissions in our direction. These reactors have aged and have no containment domes and you have not warned us of dangers or emissions in the past. Also, our aquifer is suffering from salt water intrusion. We must turn to an additional water source within 4 or 5 years. Do we turn to the Savannah River as neighboring communities have done, such as Beaufort, and risk chemical and radioactive contamination from the Savannah River Site? And will there even be enough water for an allocation from the Savannah River. The Savannah River Site is South Carolina's number 1 industrialized industrial water user, using the equivalent of half the water used by all of South Carolina's industries. In 1986, that amounted to 769 million gallons daily.	As discussed in Section 3.9 of the EIS, DOE notifies both South Carolina and Georgia officials of SRS radiological emergencies. Section 4.1.2.1 and 4.1.2.2 discuss atmospheric and liquid radioactive releases from the operation of K-, L-, and P-Reactors. Section 4.1.2.6 discusses health effects. Annual environmental reports that present information on both normal and abnormal releases of radioactivity and the resulting doses are available to the public.
S-33-05	We are very concerned about the volume of water available for the state's usage and the contamination of the Savannah River for all the people who live, fish, and work in this region. The aquifers underlying the plant site are also in a questionable state of contamination. We know you are put in charge of all your own studies, studies that might give us real answers to our fears and anxieties. None of this satisfies the longing for truth and true security in today's world. Do not restart the reactors. All of the costs are too high and all the questions are still unanswered. Thank you.	SRS uses the water it withdraws from the Savannah River primarily for cooling purposes, and returns almost 90 percent to the river.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-34	STATEMENT OF BILL LYNES Wilmington Island South Carolina MR. LYNES: My name is Bill Lynes. I live on Morningside Road on Wilmington Island. Professor Einstein is unable to be here tonight, at least in physical form. If he were here, I am sure he would not hesitate to speak out against the insanity of building more nuclear weapons. He wrote a short essay in 1947 which is still very appropriate today. I would like to read it into the record.	
S-34-01	"Everyone is aware of the difficult and menacing situation in which human society shrunk into one community with a common fate finds itself, but only a few act accordingly. Most people go on living their everyday life half frightened, half indifferent. They behold the ghostly tragic comedy that is being performed on the international stage before the eyes and ears of the world. But on that stage on which the actors under the flood lights play their ordained parts, our fate of tomorrow — life or death of the nations — is being decided. It would be different if the problem were not one of things made by man, himself, such as the atomic bomb or other means of mass destruction equally menacing all peoples. It would be different, for instance, if an epidemic of bubonic plague were threatening the entire world. In such a case, conscientious and expert persons would be brought together and they would work out an intelligent plan to combat the plague. After having reached agreement upon the right ways and means, they would submit their plans to the governments. Those would hardly raise serious objections, but rather agree speedily on the measures to be taken. They certainly would never think of trying to handle the matter in such a way that their own nation would be spared whereas the next one would be decimated. But could not our situation be compared to one of a menacing epidemic? People are unable to view this situation in its true light for their eyes are blinded by passion. General fear and anxiety create hatred and aggressiveness. The adaptation to warlike aims and activities has corrupted the mentality of man. As a result, intelligent, objective, and humane thinking has hardly any effect and is even suspected and persecuted as unpatriotic.	Comments noted.

Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response

There are, no doubt, in the opposite camps enough people of sound judgment and sense of justice who would be capable and eager to work out together a solution for the factual difficulties. But the efforts of such people are hampered by the fact that it is made impossible for them to come together for informal discussions. I am thinking of persons who are accustomed to the objective approach to a problem and who will not be confused by exaggerated nationalism or other passions. This forced separation of the people of both camps I consider one of the major obstacles to the achievement of an acceptable solution of the burning problem of international security. As long as contact between these two camps is limited to the official negotiations, I can see little prospect for an intelligent agreement being reached, specially since considerations of national prestige as well as the attempt to talk out of the window for the benefit of the masses are bound to make reasonable progress almost impossible.

What one party suggests officially is for that reason alone suspected and even made unacceptable to the other. Also, behind all official negotiations stands, although veiled, the threat of naked power. The official method can lead to success only after spade work of an informal nature has prepared the ground.

The conviction that a mutually satisfactory solution can be reached must be gained first. Then the actual negotiations can get underway with a fair promise of success. We scientists believe that what we and our fellow man do or fail to do within the next few years will determine the fate of our civilization. And we consider it our task untiringly to explain this truth, to help people realize that all is at stake and to work not for appeasement but for understanding and ultimate agreement between peoples and nations of different views."

This was written in 1947. I can't think of anything else that is any more appropriate at this time. I have a few comments of my own. Really, more questions than anything.

If we are truly a government of the people and for the people, show me the people who want this madness. Where are these masses of people who want these reactors restarted? Who are they? Where are they? Do they in fact exist? I think not. Thank you.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-35	STATEMENT OF CONSTANCIA LYNES Wilmington Island South Carolina	
S-35-01	MS. LYNES: My name is Constancia Lynes. I live on Wilmington Island. I represent no group or organization, just a concerned citizen registering a very deep concern. My family have lived in this area since Georgia was a colony and I would like to think that their descendants would be able to live here for another few hundred years. I am a veteran. I served overseas in World War II, so, I have seen something of both death, devastation and destruction. The possibility of this from the Savannah River Plant has already been well documented by many knowledgeable speakers. It seems that a juggernaut has been created and no one knows how to stop it. I was willing to risk my life in World War II for a country that I believed in, but I am not willing to face a lingering death from contamination or being blown away because someone in our so-called democracy can't listen to the citizens and change directions. Thank you.	Comments noted.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-36	STATEMENT OF ROBERT MARSHALL Hilton Head Island South Carolina	
	MR. MARSHALL: My name is Bobby Marshall and I live on Hilton Head Island in South Carolina. I have not made up a speech or anything like that because I just found out about this meeting this morning. But the speakers who spoke before me reflect most of my views.	
S-36-01	My family has lived in this area for over 200 years, specifically, Hampton County, South Carolina, which is only 25 miles south of the facility. This puts Hampton County, unfortunately, downstream from the plant. This scares me. I am for a strong national defense, but I also feel that the planned restart of this particular facility is unnecessary. I am opposed to the restart for environmental reasons. Thank you.	Comments noted.

C-464

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-37	STATEMENT OF LORRAINE KOENN	
S-37-01	MS. KOENN: Lorraine Koenn. I am here to ask why do we need more nuclear weapons? Don't we have enough? I think the lies that we have been fed about nuclear energy is a violation to the American people and if we let them continue, it will eventually destroy everything on this beautiful planet. I say no to a restart of K-, L-, and P-Reactors. Let's save our planet.	The need for nuclear weapons is beyond the scope of this EIS.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-38	STATEMENT OF WYATT PRINGLE, JR.	
	MR. PRINGLE: My name is Wyatt Pringle. I am from Hilton Head Island. I, too, have not prepared a speech except for I wrote it a few minutes ago sitting in the chair.	
S-38-01	I am from Hilton Head. I am directly opposed to the restart of the Savannah River Plant. Since its inception, the "bomb plant" as us South Carolinians affectionately call it, has sworn environmental safety. Today, radioactive tritium has tainted the drinking water of Beaufort, South Carolina and those counties which vitally rely upon the Savannah River as a water source. Do not start this facility. We don't need to produce more tritium. We don't need more tritium in our drinking water. Thank you.	Please see the responses to Comments S-03-03 on the need for tritium and S-06-07 on tritium risks.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-39	STATEMENT OF BARBARA RUDOLPH Savannah, Georgia	
	MS. RUDOLPH: My name is Barbara Rudolph and I am a resident of Savannah, Georgia. I am a Registered Nurse and the mother of four. I am not here tonight just to represent myself and my family. I am here tonight to represent those who are too young to understand, those are too old to care and those who do not have the opportunity through lack of education to understand the effects the Savannah River Plant has had on their lives the last 30 years and the effect it will continue to have on their lives for future generations.	
C-467 S-39-01	There are many issues to be addressed, therefore, I will briefly address each one with recommendations. I know you are familiar with these issues and have your own opinions. I feel that the lack of time given to the public for their comments has been far too short and that the notification given for the hearings has been short. It borders on the ridiculous.	The Notice of Availability for this EIS indicated that DOE would provide a comment period of 45 days, as required by CEQ regulations; in addition, these regulations require DOE to provide at least 2 weeks advance notice of public hearings, which it did.
S-39-02	I was told by friends and co-workers not to bother coming tonight, the Department of Energy had already decided on a course of action and that these hearings are merely an inconvenience mandated by a law that they simply cannot get around. However, I will voice my concerns and in my idealism pray that it can make some difference.	Please see the response to Comment S-09-01 on public comments.
S-39-03	First, I question the need the further nuclear materials production. As we speak, the heads of the United States and the Soviet Union are beginning discussions on strategic arms reduction talk treaties. With approximately 100 kilograms of tritium in current supply, even if no more were produced for 50 years, we would still have enough to supply more than 1,000 hydrogen bombs.	Please see the response to Comment S-33-02 on the need for tritium and the changing world geopolitical situation.
S-39-04	Secondly, although the reactors at the Savannah River Plant don't produce electricity, they otherwise operate much as commercial reactors do, by fissioning uranium atoms, producing radioactive by-products as well as large amounts of heat and radiation. And, yet, the Department of Energy does not follow its own nuclear regulatory standards set for commercial reactors.	Please see the response to Comment S-27-01 on safety regulation.
	To name a few standards needing improved regulation are seismic upgrades, containment domes, fire standards, diesel generators, and operator training.	

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-39-05	Thirdly, in its haste to restart the reactor, there has been approximately 40 percent ultrasonic testing done on the reactor vessels and the pipe welds. Unless there is 100 percent testing done before the restart, how can we be assured of the safety of these 35-year old reactors that have been shut down completely for 2 years. It is also imperative that the probable risk assessment be finished before the reactor restart and the public must be allowed time to review it. How else can we have a plan of action to assure public safety?	Please see the response to Comment S-01-02 on safety.
S-39-06	The Advisory Committee on Nuclear Facility Safety, the Defense Nuclear Facilities Safety Board, and the Tiger Team must be allowed to finish their studies and to certify to Congress that all safety upgrades have been taken place. Or are these committees simply tokens to pacify and dupe us into false sense of security?	Please see the response to Comment S-01-03 on safety oversight.
S-39-07	And, fourthly, is the issue of the vast quantities of toxic wastes that are being produced as a by-product of nuclear bomb production. Already 35 million gallons of highly radioactive liquid waste is stored in aging underground tanks which will take 10 years to process into solid canisters. And what about the 12 years it will take to permanently store in football size slabs the somewhat less radioactive salts? Then we have the low-level radioactive waste and transuranic waste already buried at the Savannah River Plant with a half life of 24,300 years. With normal Savannah River Plant operations, more than 230,000 cubic yards of chemical waste has been poured into unlined seepage basins or directly into streams flowing into the Savannah River. But the majority of the waste is mixed waste: mercury, solvents, and contaminated PCPs buried in the mixed waste management facility. The Savannah River Plant already has over 200 dump sites within its 300 square mile area which are a source of ongoing contamination to streams and a potential threat to the underlying aquifers. The government, itself, admits that cleanup already will cost up to \$10 billion and that at best will contain the mess, not eliminate it.	All radioactive waste disposal at SRS is conducted in accordance with EPA and DOE requirements, as described in Sections 2.1, 3.8, and 4.1.6. The quantities of radionuclides that have been released from past burials of such wastes do not pose a threat to public health. They are being monitored and plans for remediation are in various stages of development and implementation. Please see the response to Comment S-02-02 on waste management and environmental restoration.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-39-08	How can the public be convinced to make an environmental difference on a voluntary one-on-one scale when the government continues this massive contamination and continues to feign its concern by simply juggling cleanup funds between programs to deal with the contamination which already exists and money to manage the waste of the future? Therefore, it is my hope and recommendation that you take proposed action Alternative 3, to terminate operation of all three reactors and place them on cold standby and immediately begin an environmental impact statement on decontamination and decommissioning of the reactors. A time line for preparation of this environmental impact statement must be presented immediately with a discussion of all support facilities including fuel and target facilities. Thank you.	When the need for the reactors no longer exists, DOE will prepare appropriate NEPA documentation for the decontamination and decommissioning of these facilities.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-40	STATEMENT OF FREDERICK NADELMAN Coastal Citizens for a Clean Environment	
	MR. NADELMAN: I speak to you as a member of the Coastal Citizens for a Clean Environment, as a social worker, and as a citizen of earth living in Savannah.	
S-40-01	Gentlemen of the DOE: This proposal of yours is total nonsense and misleading. This proposal that I consider a waste of the taxpayers' money. It should be retitled, "The Ultimate Course in Extermination," or "The Shortest Way with Savannahians."	Comments noted.
	For an industrialized nation, we have the highest infant mortality rate, the highest teen-age pregnancy rate, the highest illiteracy rate, the highest homeless rate, and along with South Africa, we still lack comprehensive national health insurance. Yet, you would spend millions to contaminate the world in a cesspool of tritium.	
	During my recent visit to the LaBrea tar pits in Los Angeles, California, evidence was presented that indicated that the long evolution of the mammoth — you know, those big woolly animals, the Mastodon, the Sabertooth Tiger, and the Giant Ground Sloth came to an end relatively suddenly between 10 and 14 billion years ago. We have only theories to explain the reason why this happened. We do, however, have filmed documentation of the genocide of dissidents and "theoretical" dissidents, be they one million Cambodians or six million Europeans.	
	Will another species in the future call the extinction of humankind accidental genocide either by slow degrees through the continued unsafe production of plutonium and tritium, or by one giant, tremendous radioactive holocaust should the present missile elimination negotiations cease that are currently being held in Washington?	
	Good luck to you, Mr. Bush and Mr. Gorbachev. Either way, we have a blueprint for the "final solution" to the problem of universal existence on this planet.	
	"To be or not to be, that is the question," so said Hamlet. Such cataclysms are difficult for many to conceive as reality.	

Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response

However, the practice of murder by many cults in the United States are easily understood if only through the horror movies of Hollywood.

Can we not, therefore, understand the dangerous use of the modern adult version of Sigmund Freud's infantile phallic envy called the missile race?

We have so many of these monsters, however, that quantity is no longer a measure of quality. Children, fortunately, are now taught to say just one word when asked to do something that is hurtful to themselves or to others. To these gentlemen of the DOE, I would therefore ask everyone to say this word.

Just say:

AUDIENCE: No

MR. NADELMAN: As a sergeant I had once said, "I didn't hear you.

AUDIENCE: No.

MR. NADELMAN: Gentlemen, did you hear the people? We do not have a Freudian death wish either.

Finally, we have gained many freedoms to make the choices we want to make. Let us not be denied the freedom to choose to continue to exist. The lone Chinese citizen in Tienamen Square stopping a whole column of tanks can speak for all the people of earth in his belief that the military might of any superpower also suffers the fate it has given to the people. Thank you.

[Mr. Nadelman also submitted the attached written statement at the hearing.]

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
STATEMENT OF FRED NADELMAN		
	Fred Nadelman 1825 East Gwinnett Street Savannah, Georgia 31404 Phone Number: 912-236-7043 Gentlemen: The Savannah River Plant should remain closed and be totally cleaned of all radioactive contamination for the following reasons.	
S-40-02	The production of new nuclear weapons material is unnecessary because the U.S. has over 23,000 active nuclear warheads, a 100 metric ton stockpile of plutonium, and a 25 to 35 year functional supply of tritium. Nuclear deterrence can be maintained for decades without further cleanup. This statement and subsequent statements and statistics is the position of The Coastal Citizens for a Clean Environment.	Please see the response to Comment S-03-03 on the need for tritium and other nuclear materials.
S-40-03	The present cleanup estimates at the Savannah River Plant are currently set at ten billion dollars. All the technology necessary for such a project, however, is still nonexistent. There is also evidence that the Department of Energy has placed nuclear weapons production above safety concerns and basic maintenance for over thirty years. This is compounded by the fact that the Savannah River Plant, built in the 1950's, is now overage. Furthermore, severe environmental contamination is rampant and includes 168 different waste sites within the plant boundary. Nearby radioactive by-products from the plant's nuclear weapons production have been found around Skidaway, Wilmington, and Tybee Islands.	Please see the response to Comment S-02-02 on waste management and environmental restoration.
S-40-04	Millions of gallons of radioactive water and other hazardous chemicals have been dumped into unlined pits and seepage basins. The underground aquifer which supplies water to much of the Southeast is beginning to become contaminated and is in serious jeopardy. Hundreds of thousands of curies of radioactive tritium and krypton gases are released into the air each year. This plant	Please see the responses to Comments S-39-07 on radioactive waste and S-05-13 on the aquifer.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	releases more radioactivity into the environment than any other nuclear facility.	
S-40-05	Finally, Because the Department of Energy and its contractors are accountable only to themselves, lack of outside oversight has only contributed to the grossly inadequate safety programs. The reactors, of a similar design as the Chernobyl reactor which exploded, do not have containment domes, a requirement of commercial reactors and adequate fire safety equipment will not be in place until 1992. 34 million gallons of radioactive wastes are being stored in underground tanks similar to one which exploded in The Soviet Union in 1957, causing a wasteland of 325 square miles. Also, the exhaust system which is supposed to prevent the build-up of explosive gases, have been found to malfunction.	Please see the responses to Comments S-01-03 on safety oversight and S-05-07 and S-13-02 on Chernobyl.
C-473 S-40-06	To conclude, the U.S. geological has predicted the probability of a severe earthquake on the East coast by 2010. The existing design and condition of the Savannah River Plant are likely to result in a severe explosion when this event occurs. For all of the preceding reasons, the Department of Energy and Westinghouse, its contractor, should not be allowed to restart the existing reactors at the Savannah River Plant or be or be allowed to construct new reactors. Sincere1 yours, Fred Nadelman, MSW	As described in Section 2.1, SRS reactor safety systems are being reviewed and upgraded to ensure that the reactors can withstand seismic events. As discussed in Section 4.1.3.2.1, such events could lead to severe accidents. The design-basis earthquake is the most severe earthquake projected for the SRS area.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-41	STATEMENT OF CHRIS MACMILLAN Bluffton, South Carolina	
	MR. MACMILLAN: I am Chris MacMillan from Bluffton, South Carolina. Good evening.	
	I would like to read from the Greenpeace Book of the Nuclear Age by John May.	
S-41-01	"The main DOE report, Review of the Operating Experience History through 1987 of Savannah River Plant Production Reactors, also has revealed chronic equipment failure and poor operating procedures caused by the Savannah River reactors to shut down unexpectedly nine to twelve times a year over a 20-year period, a rate twice that of the U.S. civilian nuclear power industry. The highest number of shutdowns was 43 in 1977. A former engineer claimed he tried to warn officials in 1982 about leaks from the holding tanks, that they were highly radioactive liquid waste was stored. There had been 25 accidents in which workers have been accidentally exposed to radiation, workers had complained of unsafe practices, but were ignored.	Comment noted.
	For three days, operators at the plant had been trying to start a nuclear reaction when on 10 August, the reactor suddenly produced an unexpected and unexplained power surge. When debriefed by DOE personnel, the operators admitted they had no idea what had caused the mysterious incident. Worse, according to one DOE safety investigator's notes, they didn't care."	
	This is from the Washington Post, October 6, 1988.	
	As you can see from the preceding reading, the safety record at the Savannah River Plant reactors has been very poor, indeed. Those in charge at the 40-year old facility don't even care when accidents happen or are about to happen.	
	Well, we do care and we feel that we cannot take the chance of another Chernobyl. My brother-in-law experienced the after effects of Chernobyl from his residence in Sweden. Even though he lived 700 miles from the site of Chernobyl his family and many others were greatly affected. Swedes are great sun worshipers and since they	

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	tolerate very long and hard winters, they look forward to spring with great excitement. Spring is the time of celebration and favorite pastimes include mushroom and berry picking and fishing. But because of what happened at Chernobyl where the rains fell in Sweden 700 miles away, neither berries nor mushrooms can be consumed.	
	Laplanders who herd reindeer for their living could not eat reindeer meat. Fish were contaminated. These rains contaminated the entire ecological chain. These were just the immediate effects. No one knows what the long-term effects will be.	
S-41-02	I understand that my niece has a chance of contracting leukemia as a result of this manmade disaster. My brother lived many hundreds of miles from the Chernobyl Plant. Imagine the disaster of similar magnitude at the Savannah River Plant and the effects it would have on those who live within 100-mile radius range.	Please see the responses to Comments S-05-07 and S-13-02 on Chernobyl.
C-475 S-41-03	Draft EIS has not dealt adequately with the problems of safety at the plant. How can you possibly think of restarting the reactors without being able to insure all of us here our safety?	Please see the response to Comment S-01-02 on reactor safety.
S-41-04	We are now told that we have tritium in our drinking water. You will tell us that the radiation from the tritium in our drinking water is just a trace, much less than the amount an individual would receive from x-rays, fallout from nuclear weapons testing, or radon in our homes. This does not console us at all.	Please see the response to Comment S-06-07 on tritium risks.
	The point is that we do not want tritium in our drinking water. And, most of all, we don't want the reactors starting again up the river from us.	
S-41-05	The trace is just the beginning. As more and more of the storage tanks for the 70 percent of the nation's high-level nuclear waste continue to corrode, contents seeping into our river and aquifer, it can only get worse. So, why not focus all of our attention on a clean up at the Savannah River Site? Retrain the thousands of workers to clean up the mess that has been created.	Please see the response to Comment S-02-02 on waste management and environmental restoration.
	At the end of the cleanup, reevaluate the situation at hand, and I feel confident at that time that the situation will not warrant restarting the reactors at all.	

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	Have you ever driven on Route 125 — and I am sure a lot of you have — through the grounds of the bomb plant. Signs warn drivers of steam rising from the creeks, but even at a brief glance, one cannot help but notice the mutilation that has taken place to the environment. Life is non-existent. Trees are dead. It is really eerie, reminding me of what the earth would look like after a nuclear holocaust.	
S-41-06	You should be ashamed of even considering resuming operations prior to the completing of the cooling tower for the K-Reactor in 1992. You will be operating in violation of the standards set forth for thermal discharge in the Clean Water Act. In conclusion, I have chosen to use a little quote that I got from the paper that Pat Tousignant, if she minds if I quote it, which referred earlier this evening, she had mentioned from Art Dexter from Aiken. He wrote to the Senate Newspaper this past week in that article. I took a brief excerpt from it. "At a time without precedence in the history of mankind when those who share this planet are engaged in the fulfillment of a common longing for freedom, peace and equality, the renewal of the arms race through the announced restart of the Savannah River Site reactors can only be viewed as a cruel betrayal of the hopes and aspirations of people everywhere."	The operation of K-Reactor at full power before the completion of the cooling tower is in accordance with a Consent Order (84-4-W) issued to DOE by SCDHEC. DOE is expediting the schedule for construction of the cooling tower. See the revisions to Section 2.1.6 of the EIS.
S-41-07		DOE has stated in Section 1.2 of this EIS that the requirements for nuclear materials could potentially be reduced in response to the changing world geopolitical situation.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-42	STATEMENT OF MICHAEL MYERS Hilton Head Island South Carolina	
	MR. MYERS: My name is Mike Myers. I am a resident of Hilton Head Island and I hope you don't think I am too bad a parent to keep my kids up tonight, but I thought this was an important part of their lives as well as mine. I want to thank Pat, also, for her article in the paper. That is why I am here. I didn't know about the hearings until two days ago when I saw the article in the Island Packet.	
S-42-01	I just moved here in April from Cincinnati, Ohio where I lived within 12 to 15 miles for 22 years of the Fernald Plant. I became involved with the issue there, mainly as an observer. I had several clients who were involved with the protesting of the plant. And like many of the population in Cincinnati, I was in pretty much denial of any danger to myself, but became educated by some of my clients.	Please see the response to Comment S-12-11 on psychological impacts.
	I am a family therapist. I work as a marriage and family psychotherapist on Hilton Head, beginning a practice there, but in Cincinnati, I was on the faculty of the Family Therapy Center, the Department of Psychiatry, College of Medicine, University of Cincinnati. And in that capacity, I had a chance to work with many different families and children.	
	I watched as small children, the ages of my two sons, would draw pictures of nuclear bombs or poisoned wells and other things as they tried to process the information that was coming to them through the media on TV and elsewhere and listened to their nightmares, as well as their parents' nightmares. So, I suppose I am here tonight partly for my own mental health and for my children's mental health as I exercise an option to stand up against something that I think is a very real threat to my family.	
	Many of my clients talk about their fears: following trucks on the highway, wondering if they are carrying contaminated materials, wondering if they are breathing the air coming into their car and killing themselves and their families. People who are afraid to pick up a Coca-Cola can because they wonder which city the water was	

C-477

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	drawn from that made the Cokes. Some of these things are kind of neurotic and obsessive and ruminating. But on the other hand, all of us are being affected by these intrusive thoughts more and more as we read in the paper constantly about the poisons in our environment.	
	Westinghouse has proven to the people of Cincinnati that they are not competent to handle these materials. I do not say that with any smugness or blame. There are an awful lot of incompetent people in my profession, too. But I do know that they are in over their heads and that the documentation that is coming into the Cincinnati newspapers everyday is proving that records were fudged, that employees were intimidated, and that Westinghouse in general covered up its own inadequacies as part of a security measure to try to avoid panic among the population.	
	I am not sure that Cincinnati's population is panicking yet, but people are obsessing on these things and finding it difficult to sleep at night more often than they did before.	
	Dr. Jacob Lindy is on the faculty of the Department of Psychiatry at the University of Cincinnati. He is world famous for his documentation of Post-Traumatic Stress Disorder which many of us know. People following Hugo or the Vietnam War or other tragic events, suffer from which definitely intrudes on their health and their ability to form meaningful relationships, to maintain meaningful employment. This is epidemic proportions. And Dr. Lindy and others have identified a new syndrome which they are presenting to the Academy of Psychiatry for inclusion in the Diagnostic Statistical Manual of Mental Disorders that has to do with toxic dump syndrome which is very much like Post-Traumatic Stress Disorder in which people fear for their lives constantly, daily. They cannot take a drink of water, cannot go out and take a deep breath of fresh air, cannot go swimming without fearing for their health and safety. And, so, the effects of this go far beyond just the radiation effects that may effect people and shorten their lives by 12 years and make them die horrible deaths. It also intrudes on their mental health. It makes people less hopeful. It makes them less willing to involve themselves in their own destinies and fearful for their children. Thank you for listening.	

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-43	STATEMENT OF WILLIAM LEWIS Coastal Citizens for a Clean Environment MR. LEWIS: Thank you. My name is William Lewis. I am speaking on behalf of myself, my friends, my family, Coastal Citizens for a Clean Environment and others who are not present. What is the purpose? According to the Department of Energy, DOE figures, the United States currently has approximately 20,000 nuclear warheads in its arsenal. According to DOE reports, if no more tritium or plutonium is produced for 50 years, one-half of our nuclear warheads would still be operational. Each warhead has the fire power of four times that which was detonated at Hiroshima. What is the purpose? Is it for deterrence? If so, isn't 10 to 20,000 warheads enough for deterrence? Or is it for war? If so, isn't 10 to 20,000 warheads enough for war? Or is it for defense contractors' pocketbooks at the expense of the American taxpayer, at the expense of our children's future, at the expense of our environment, at the expense of civilization, at the expense of life on earth? What is the purpose? Who will receive the benefits? To me, the answer is obvious: Friends of the DOE receive the benefits. The American taxpayer receives the burden. This taxpayer says, "Not at my expense." I oppose the restart of this reactor and I am against any new production until we can clean up the mess we have currently. Thank you. [Mr. Lewis also submitted the attached written statement at the Savannah, GA hearing.]	Please see the response to Comment S-03-03 on the need for tritium and other nuclear materials.

S-43-01

C-479

Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response

STATEMENT OF WILLIAM S. LEWIS

WHAT IS THE PURPOSE?

According to the Department of Energy (DOE) figures, the United States currently has approximately 20,000 nuclear warheads in its arsenal. According to the DOE reports, if no more tritium or plutonium is produced for 50 years, one half of our nuclear warheads would still be operational. Each warhead has the fire power of 4 times that which was detonated at Hiroshima. What is the purpose?

Is it for deterrence? If so, isn't ten to twenty thousand warheads enough deterrence?

Or is it for war? If so, isn't ten to twenty thousand warheads enough for war?

Or is it for defense contractors' pocketbooks at the expense of the American taxpayer?

At the expense of our childrens' future?

At the expense our environment?

At the expense of civilization?

At the expense of life on earth?

What is the purpose? Who will receive the benefits? To me, the answer is obvious. Friends of the DOE receive the benefits. The American taxpayers receive the burden. This taxpayer says "Not at my expense."

WILLIAM S. LEWIS
9 Rose Avenue
Savannah, Georgia 31406

C-480

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-44	STATEMENT OF DANIEL STAINBACK	
S-44-01	MR. STAINBACK: Daniel Stainback. And I oppose the restart of the Savannah River Plant. I support all the things that have already been said for reasons, but I would also like to add that when you leave here tonight just look around you and you can see the reasons, just around, the poor ways that the African Americans are living right now and the help that they need. And, also, just the factories, the stuff that they are already putting out into the air is just appalling. And if the things that have been said, just look, open your eyes when you leave. That's all I'd like to say.	Comments noted.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-45	STATEMENT OF STUART JOHNSON Student, Savannah College of Art and Design	
S-45-01	MR. JOHNSON: Stuart Johnson. I am a student here in town at Savannah College of Art and Design. And I just came tonight to voice my opinion in opposing the restart of the three reactors, K-, L-, and P-. And our classes ended a couple of days ago, so, we would have had a lot more students here, I am sure. So, I am also representing those who have already gone home. And I would just like to voice their opinion as well. Thank you.	Comments noted.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-46	STATEMENT OF JUDY JENNINGS	
S-46-01	MS. JENNINGS: The Coastal Group Sierra Club's concerns about the continued operation of the KL&P reactors at the Savannah River site focus primarily on radioactive and hazardous waste management issues and radioactive contamination of our ground and surface water supplies.	Please see the response to Comments S-02-02 on waste management and environmental restoration and S-39-07 on hazardous and radioactive waste management.
S-46-02	Since the Savannah River sits over one of the most important aquifers in the southeastern United States, retention in and disposal of this waste into the Savannah River site's burial grounds, basins, and tanks threaten drinking and irrigation water for millions of people. The surface water is also threatened.	Please see the response to Comment S-05-13 on the aquifer.
S-46-03	Tritium and cesium-137 have been found in the Savannah River, an increasingly important source of drinking water for people in this area. Past contamination of the Savannah River by radioisotopes and biological concentration of these isotopes are of concern to members to the Coastal Group Sierra Club. We encourage intensified and thorough clean-up efforts at the Savannah River site. Thank you.	DOE presents estimated exposures to neighbors and downstream water users accumulated during the period from 1954 to 1989 in Section 3.7.1.2 of the EIS. As indicated in that section, the total effective dose equivalent to a water user over that total period (assuming the Beaufort-Jasper Water Treatment System had been in place from the beginning) would have been about 20 mrem; the total dose equivalent from natural background over that period was about 10,600 mrem. Section 4.1.6 addresses the potential additional risk to human health resulting from the continued operation of K-, L, and P-Reactors. Independent agencies have been (and are) evaluating the health effects of past operations, as described in Appendix B.1.5; no significant health impacts on the general public have been identified.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-47	STATEMENT OF JOAN TAYLOR	
S-47-01	MS. TAYLOR: This will be mercifully brief, because I have no new information to add. I would like to add my voice to the voices of those who have already spoken convincingly against the restart and for Alternative 3. Of course I am worried about immediate environmental concerns. I live in Beaufort, and I have seen the stream that sends the water from Savannah River to Beaufort. I am concerned about accidents and about the lack of a containment dome.	Please see the response to Comment S-01-02 on safety. Section 4.5.1 of the EIS discusses containment alternatives.
S-47-02	But most of all, I am concerned about the insanity, or stupidity, or if you want a more moderate word, the poor judgment in creating more nuclear waste when we have not yet figured out how to deal with the nuclear waste that is already beginning to contaminate the aquifer and the surrounding water supply.	Please see the response to Comment S-02-02 on waste management and environmental restoration.
	It seems to me that one of our concerns is the employment of the good thousands of people in the area of the SRP. And it seems to me that it would be very reasonable to put those people to work cleaning up the nuclear waste which is already collected rather than in creating more.	

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-48	STATEMENT OF MICHAEL BALAZS	
S-48-01	MR. BALAZS: My name is Mike Balazs and I speak for myself. After listening to you two speak and from what I have read and what I have seen, I believe that you the DOE have no intention whatsoever in terminating operation of KL&P reactors, and that restart will be shoved down our throats whether we like it or not. I also feel that these hearings are a palliative measure to satisfy the public interest and concern only.	Please see the response to Comment S-09-01 on public comments.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-49	STATEMENT OF CHUCK NIEMEYER	
S-49-01	MR. NIEMEYER: I am Chuck Niemeyer, and I am speaking on my own behalf. I think that there are a lot of problems with the Savannah River site. Some of the problems that way that I see it is that we have got a lot of thermal pollution. And I think that it is one thing to have a little bit of thermal pollution, but it is another when you cannot even adhere to your own federally governmental and federally regulated guidelines.	SRS facility thermal discharges are in compliance with the terms of a permit and Consent Orders issued by SCDHEC. Please see the response to Comment S-41-06 on K-Reactor consent decree.
S-49-02	The fact that you are producing tritium in our defense and for our national interests should not be a reason for you not to use your own guidelines that are set up and that nuclear regulatory industries have to adhere to. So that is one point. I just cannot imagine why we have these rules just so that they can be broken. That is not acceptable.	Please see the response to Comment S-27-01 on safety regulation.
S-49-03	And then there is the long term waste. We have accumulated a lot of waste since the 1940s. And we have not ever come up with a real great plan for them. And I would like to have you all think back to man and woman-kind's history to a thousand years ago and think of the progress that we have made in a thousand years. And then go on ahead and project on into the future, and think a thousand years from now where we will be. We are going to be in a radically different place.	Please see the response to Comment S-27-03 on the immobilization of high-level waste.
S-49-04	And yet we are going to have some waste that is going to be with us for many, many thousands of years down the road. And it is unfathomable to think that we are doing that to our future generations. Even if we are going to bury it deep into the earth, it is going to be there decomposing very slowly and just unacceptably. I cannot imagine how anyone with any view to the future can let that kind of thing happen.	
	And then there is the need issue. And I cannot really talk about the need not being a military planner and not being a world leader or anything like that. I do not know what kind of need we have for these items. But I do think that we have enough missiles. And the ones that go out of production that we have to take off the	Please see the response to Comment S-03-03 on the need for tritium and other nuclear materials.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	line due to regular aging of these missiles can be reprocessed, and we can use the plutonium as well as the tritium after it has been reprocessed to go into new if we have to have them missiles.	
	I do not think that it is a wise idea to restart really old technology reactors to make this new tritium. So I think that the Savannah River site is a real poor choice, and I will get to that in a second.	
	The Savannah River site is our backyard, and no one wants something like that in their backyard. But my contention is that this is a particularly bad backyard to have this kind of site in. We have to think about things like possible terrorist sabotage, the possibility of a nuclear war, or any kind of leaks either large or small, all which would result in a large population being contaminated with radioactive materials.	
S-49-05	There is no good evacuation plan for an emergency. There are not any civil defense plans here for Savannah. Just look at what happened during Hurricane Hugo when we were trying to get out of town and all of the highways were blocked, and we did not have any good plan for evacuation.	Please see the response to Comment S-33-04 on emergency notification and releases from SRS.
	In the past, there have been leaks that the DOE has not even told populations about until they could cover it up or let it leak out later. And I just think that the record, the DOE's record, on human safety is such that we may not even be aware that there is a massive leak that is jeopardizing our safety let alone having any adequate preparations to get out of town or to go into some kind of fallout shelter.	
	And there are not any basements here in Savannah either. It is not like someone could do something on their own. We are being held hostage, because we have no way to even defend ourselves. So those are some of my objections to that kind of thing.	
	The site is so old. I mean if we need this stuff so bad, let's put it somewhere else. The soil is sandy, and the water leaches through sand. Everyone knows that. It is very highly permeable. So any kind of an escape of a liquid waste is obviously going to do into it. It is hard to contain it in our soil. I mean that is just a fact.	

C-487

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	So no basements, no way that a population can get out of the mess that the government has gotten us into, poor soil, the contamination of waste sources, thermal pollution, and just not adequate safety regulations. For all of those reasons, I say no, it is not worth it.	

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-50	STATEMENT OF JAMES ZORN	
S-50-01	MR. ZORN: My name is James Zorn, and I am speaking for myself. I was born in 1956, and at times it seems that my entire childhood was a series of international crises which required the whole family to gather around the television awaiting imminent nuclear destruction. The Cuban missile crisis, the Bay of Pigs, the Berlin Wall, the Yom Kippur War, the Pueblo incident. Is it any wonder that we grew up to be a somewhat anxious generation nervously scanning the skies wondering if any future at all was in store for us. I was only a child when these reactors were built. I was not involved in the decision. Fortunately, most of the men who helped create the world political climate in which the existence of these weapons was determined necessary are now dead. And let's hope that the mentality which motivated them is also dead. I am a resident of Savannah and a native of South Georgia, and I am telling you this. That we do not want your weapons facility here, and we do not need your weapons facility here. Shut it down and clean it up.	Comments noted.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-51	STATEMENT OF JAMES LOOMIS	
S-51-01	MR. LOOMIS: My name is James Loomis, and I am the Director for the Cetacean Relations Society on the Island of Maui, and I would like to speak for the whales who have been here for 60 million years with a huge brain. And to think that upstart humans could have this technology that could take away their habitat in such a short time, it is just outrageous. We are so arrogant that it is outrageous. I was out with the dolphins off Wausau and Piney Island just about an hour ago. And looking at this beautiful Savannah habitat for the dolphins, this gorgeous wild place. And I am so sorry to have this connection with the Savannah River reactor tied in with this lovely, lovely city and environs. I brought along a picture of something that the Department of Energy should be looking into. This is a crystal of palladium that they found off Manokuai, one of the volcanoes on Hawaii, twenty years ago when they were testing for tritium in the atmosphere with regard to a Russian air shot. There was an immense amount of tritium there before the Russians exploded their weapon, and they found that it is a natural reaction of a volcano. Tritium is not only made at 150 million degrees, but it is made at earth temperatures. There is a nuclear reaction happening within the earth. And this interest of Pons and Fleischman and room temperature fusion of six months ago that was pretty well put down, I think it is a coverup. I think that the Department of Energy and these monolithic structures that we have that their time is up, and that we should be decentralizing every way we can. The South should withdraw, try it again. And I think Romania and that sort of thing, Russia is lucky to have those countries drop out. Because we are not going to submit ourselves to a higher authority like the United Nations. There will not be a world order until these monolithic structures like America are broken down into smaller units. I am a university mathematician and taught for ten years. I taught the theory of relativity for many years. It is beautiful to take just the constancy of the speed of light and with the apparatus	Comments noted.

C-490

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	of mathematics derive those beautiful equations in which energy equals MC squared. It is deeply satisfying. It is part of our nature. There should be nuclear energy, there is no question about it, but not on a planet.	
	It is wonderful for the moon. It is wonderful where you do not have circulating systems like air and water. It is wonderful there. So let's keep the thing going. But let's not start out this reactor now, and let's do clean it up. I mean it is really is sort of common sense. Although like Einstein said, common sense is the accumulated prejudice of the ages. And Einstein said some marvelous things. Like one of his last statements was our task should be to widen our circle of compassion to embrace all living creatures and the whole of nature and its beauty.	
	Well, this is really antithetical. And you guys are just young men, and I am telling you that it is the wrong path and your jobs are probably tied up in it. We cannot be thinking anymore, the hour is too late to be thinking about saving jobs. It just cannot be. We have to think in terms of saving this planet, and this is obviously wrong.	
	Now we ourselves are addicted to energy. Look at all of these lights pouring off, do we need all of this. We are all used to it. I went to the jungle twenty years ago. I left teaching to see what our true needs are. And I cut my energy use to about 99.5 percent. And the fifty ways to save the earth. It is what you do not do that is really going to help.	
	And we can live as freely as the dolphins. And we have magnificent cultural lives in which our bodies are as strong as the dolphins and in which we recapture our natural selves. And we are going to have to give up our addictions. We can live off beautiful organic gardens. And we can use the energy of the sun. I have been doing it for twenty years. We can unplug. It is wonderful, it is the best news.	
	It might seem as though it has nothing to do with your life now. But if you are forced to it, you will just remember that it is there. In the meantime, get your gardens going and drop out on these large corporations who are able to destroy the world. The corporations are created so that they will not have a conscience.	

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	They exist in perpetuity, and they exist such that they can transcend the human conscience and rape the earth.	
	We are raping the earth. This is a dominator this is a military and industrial complex. I talked to Eisenhower in 1956, and it is just out of hand. He was afraid of it and he was right. It is 35 years later and it is an obscene military and industrial complex that is just out of hand.	
	This is a beautiful time for Bush to say to Gorbachev we are not going to start up that reactor. I hope that the citizens will stand up for their planet. Thank you very much.	

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-52	STATEMENT OF SUSAN BLOOMFIELD	
S-52-01	MS. BLOOMFIELD: My name is Susan Bloomfield, and I live in Augusta, Georgia. At previous scoping hearings, I have expressed concern about the problems created by the Savannah River site and the restart of the reactors. They include hazards to water, land, and air quality, lack of epidemiological studies, no solution to the disposal of a 40 year accumulation of radioactive waste, and the overwhelming expenditure of the taxpayers' money. These are still very real concerns, perhaps even more now than at the last hearings.	Please see the responses to Comments S-03-02 on environmental impacts, S-03-01 on health risks and epidemiological studies, and S-27-03 on waste immobilization.
S-52-02	One of the major concerns that I heard expressed by many at the EIS hearings was the need for stockpiling tritium. This testimony seemed to be completely ignored in the summary draft EIS. I wonder is the Department of Energy really listening, and does the Department of Energy really care. Many question the advisability of stockpiling excessive nuclear weapons material when the arms control negotiations may drastically curtail the need for such weapons. In a letter written recently by top United States scientists urging President Bush and Soviet President Gorbachev to consider a complete nuclear weapons materials production halt, they through current or planned arms reduction talks will "likely reduce the United States and the Soviet strategies stockpile as much as several thousand warheads." Even now the amount of tritium in the United States weapons inventory is sufficient to meet tritium requirements of "3000 warheads for 35 years and 1000 warheads for more than 50 years." It only required two bombs to end World War II. Once again I ask how many nuclear bombs do we need for mutual annihilation.	Please see the response to Comment S-33-02 on the need for tritium and the changing world geopolitical situation. Also, please see the response to Comment S-09-01 on public comments.
S-52-03	The EIS draft summary appeared concerned with preserving the jobs of those employed at the Savannah River site. Actually nuclear weapons production has distorted and produced a false local economy. The area surrounding the SRS has become economically dependent on the federal government and the nuclear weapons industry.	The purpose of this EIS is to disclose the environmental impacts of proposed actions and their alternatives. The job loss resulting from terminating operation of these reactors is one of those impacts.
S-52-04	The only way to ease the dependence is to emphasize clean-up of the Savannah River site facility now and economic diversity for the region's future. If the environment, and human health, and safety	Please see the response to Comment S-02-02 on waste management and environmental restoration.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	are to be sacrificed to protect jobs, I ask you to remember that the quality of life of those not employed by the plant is of equal importance.	
	The United States allots billions for stockpiling excessive nuclear weapons. This money could more productively be used to clean up environmental contamination. It can be used in the prevention of our high infant mortality rate. It can provide additional funds for education, for care of the elderly, and numerous other problems that face our country.	
	With the lessening of the Cold War, we now have the opportunity to divert funds from destructive forces to constructive forces. Let's not allow this marvelous opportunity to slip through our fingers for lack of foresight. Thank you.	

C-494

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-53	STATEMENT OF HERBERT SUMMERS, JR. MR. SUMMERS: Andrew Summers. I am a member of Coastal Citizens for a Clean Environment. And I also represent the Pastoral Care Network for Social Responsibility. I am one of I am sure a number of people in the audience this evening who has had a chance to read this May 1990 environmental impact statement by the Department of Energy. It certainly is an impressive looking document with lots of figures in it. Unfortunately, it sort of reminds me of a statement by Mark Twain when he said, "It is not so much things that people don't know that causes trouble, it is the things that folks know for sure that ain't so." It is kind of a myth I think that exists in our society about the role of experts in creating documents such as this. I think that the myth is essentially that a document like this with all of the impressive credential of people who contributed to the research that goes into the document, that somehow a document like this is objective, value free, and scientific. That nobody in their right mind would challenge such an authoritative looking piece of paper such as this.	
S-53-01	Well, unfortunately, there is more than a little bit of evidence that experts are bought and sold every day. And that a document like this is based on a conclusion that has already been made and then evidence is accumulated and organized in order to prove that foregone conclusion. Some of us know the story of Mr. William Lawless who worked with Dupont in past days. Some have seen the documentary film on the Savannah River plant entitled Building Bombs, and have through that film and through other opportunities have had a chance to meet Mr. Lawless and hear the testimony of his relationship with Dupont and the Department of Energy. And even in this impressive looking document here for instance, there are some interesting statistics that do not quite go together with some other studies. For instance, on page 3-50, there is a	Please see the response to Comment S-09-01 on public comments.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-53-02	chart that shows the major sources of radiation exposure in the vicinity of the Savannah River site. And according to this May 1990 study, the Savannah River site itself only amounts to an annual dose, average dose per individual of 0.1 rems per year.	The calculated annual dose to an average offsite individual within 80 km is about 0.1 millirem. The dose to the maximally exposed individual is 0.6 millirem per year.
S-53-03	It does not quite jell with another study that was done by the Georgia Department of Natural Resources Environmental Radiation Surveillance Program survey taken in 1979 through 1980, and also 1983 to 1984. It shows a rather dramatic different figure. Instead of .1, the figure is 60.0 give or take nine rems per individual. That is a rather dramatic difference.	Please see the response to Comment S-05-18 on offsite doses.
S-53-04	I am told that this Georgia Department of Natural Resources team was made up of a small team of scientists who conduct these surveys on a regular basis. I also read in the newspaper that a DOE official said that the increase of cancer rates as a result of the Savannah River site would be negligible. And I am still looking around trying to try to find someone that has a negligible cancer. And so far, I have not met that person. Well, I think that based on the number of people that have been here today and the kind of testimony that the Department of Energy has heard, I think that you would have to conclude that we folks here in the Savannah area basically are pretty polite people. I think that some of us may even have read Miss Manners. We have been taught to behave ourselves. We have been taught to be nice. But I think it is fair to say that there are a lot of people that are distressed about what some have called a conclusion or decision that has already been made. So we are just kind of going through the motions here with these opportunities to speak. I think that it is fair to say that we folks around here in the Savannah site area are about prepared to throw away our etiquette books and our manners books. I think that we are apt even to go so far as to get mad and angry. And I think that we are prepared to go so far as to make the decision to deactivate these reactors, a very costly decision for the Department of Energy and for the present Administration. I think that we are ready to claim our peace dividend, and I think we want it now. Thank you.	Please see the response to Comment S-03-01 on health risks.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-54	STATEMENT OF BILL MARESKA	
	MR. MARESKA: I am Bill Mareska, Martinez, Georgia, a suburb of Augusta. These gentlemen sure live a hard life taking all of the abuse from this mike that they have, not only at this hearing but at the previous hearings that I have attended.	
	I am sure that they are just as fine a person as all of the other retirees of Dupont who have spoken to me about life at Dupont after they have retired. And I am sure that these people will probably speak differently once their pensions are assured and their salaries are not longer in jeopardy.	
S-54-01	I, myself, am for no restart. I feel that the cost is excessive to the taxpayers, to the environment, and to the health of America. I think that the nuclear war materials production is unnecessary and farcical. I also believe that it will require an agency outside of the Department of Energy to call a halt to nuclear war materials production. The Department is intoxicated on its own power and with the monies that are generated.	Please see the response to Comment S-03-03 on the need for tritium and other nuclear materials.
S-54-02	Reading the environmental impact statement, I note that they have concluded that 9600 jobs are more important than the lives of the people, the increase of cancer, and the insult to the environment. I wonder where they came up with the figure of 9600 jobs. Today there are more than 26,000 on site jobs. How does 9600 square with 26,000? And I wonder if all of their other figures are just as accurate. And I wonder if they are using the same sort of ciphering when they work with the reactors. It is frightening.	The figure of 9,600 jobs lost was based on an estimated worker population in May 1988 of 18,635 workers at SRS; it reflects the best DOE estimate of operating, health and safety, security, and construction jobs that might be lost if the operation of all three reactors did not continue. Also, please see the response to Comment S-52-03 on employment.
	I do not know if they came up with the 9600 to hide the amount of money that is actually consumed at the Savannah River site. We are now faced with a monumental interest on the national debt, not to mention the national debt itself. They propose today a \$500 billion bailout for the S&Ls, and virtually no money for education, health care, and the homeless, and least of all the clean-up of the radiation contamination here, at Rocky Flats, Fernald, and Hanford, and on, and on and on.	
S-54-03	The environment has been damaged. This has been documented again and again. No nuclear facility is safe. I hear the Savannah River site being heralded as a safe facility. It is not safe. The	Please see the response to Comment S-03-02 on environmental impacts.

Table C-6. Public Comments and DOE Responses

Comment
Number

Comment

Response

environment is damaged. And of course in Europe, the children wear outside clothing and then they have their inside garments.

The ground can no longer produce food that is safe to eat or animals that are safe to consume. The cost would be incalculable compared to the 9600 jobs should some similar instance occur here, and it is well on its way.

I believe that the problem of a nuclear deterrent is a political and financial problem and not a tactical problem. All of our wars, if one is a historian buff, you will find these were not military armament problems but they were all political and financial and were tactical problems lastly as to which country was going to take which country over first for what spoils of war.

We could not have used a nuclear deterrent in Vietnam. It was our friends who were fueling the oil pipeline to Hanoi. It was our friends who were producing the armaments. We would have been nuking our own friends. Would we nuke Quadaffi? We would have to nuke the French at the same time.

So the idea of using a nuclear deterrent I think is irresponsible. I think that we are producing a greater danger that terrorists may come into possession of nuclear materials to hold the entire world hostage, terrorists who are totally irresponsible. This is not only the material that is unaccounted for on site, but also that which is sold to our allies who have been known to in turn act as middle men to pass it on to our alleged enemies. Thank you.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-55	STATEMENT OF CHARLES BOTTON	
S-55-01	MR. BOTTON: My name is Charlie Botton, and I represent anyone who is concerned with the environment along with myself. I first came to Savannah, I am a student here at Savannah College of Art and Design, and one of my reasons for coming here was the area. It is very beautiful here. I am originally from Virginia and I am used to being surrounded by trees and open fields. And Savannah is sort of a deceiving place when you first get here. It is quite beautiful and everything, but you are greeted on the weekends occasionally by the quite unsavory smell of Union Camp right up the road. And it is the first place that I have ever lived that when I have held a glass of water up to the light that it looks more like a collection of sea monkeys than it does drinkable water. All I am saying is that I do not know the whole low down on the reactor out there, but I am flatly opposed to it from whatever information I have found out about it. And as far as I know, the Cold War is over. That is what I have been told. And I think that you all should realize that too. I see no reason for reopening the reactors. That is all that I have to say.	Comments noted.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-56-09	inhabitants on our planet. Secrecy has removed from the general public the duty to be informed about these issues which are vital to our health and well-being.	
	It is just astounding to me that the secrecy probably has not hidden what we are doing from our enemies but only from the American public. It should not shield the nuclear industry from shabby work, unsafe practices, and incompetency. There is enough plutonium even according to former Energy Secretary Herrington. We can recycle plutonium. What we have in the way of tritium has to be enough. We can no longer afford to jeopardize the continued existence of future generations for a false sense of security now.	Please see the response to Comment S-03-03 on the need for tritium and other nuclear materials.
	If 24,000 nuclear warheads are not enough, how many will it take to make us feel safe? I do not believe that we need more. And I object to the restart of the Savannah River plant reactors. The cost is just too high. Thank you.	

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-57	STATEMENT OF GARY GARRETT	
	MR. GARRETT: My name is Gary Garrett. As of two months ago, my current address is 13318 Chesterfield Drive in Savannah, Georgia.	
S-57-01	I came here tonight as an interested citizen unbiased in the hopes that I could get more meaningful information about the new home and perhaps the jeopardies with which we are faced.	Comments noted.
	A little about my background. I am a degreed electronics engineer. I have carried a high set of security clearances that this land has to offer for 28 years. And in the execution of duties associated with that, and you may say in the military and industrial complex, that I spent most of my whole life as a civilian in Europe as close as my clearances would allow me to the Russian border.	
	It was in the execution of some of these duties in 1986 that my wife and I, and I want you to take a good hard look at her when she comes up here in a few minutes, were subjected to one of the heaviest doses of radiation that any living human being has ever survived. You are looking at two walking dead people. And the true meaning of live each day to its fullest could not be more felt in the Garrett household.	
	Approximately seven months after we took the heavy dose, our thyroids went dead. And we have a checklist of what we can expect. As insurance companies like to say, we hope you are paid up with us. Look at us, ladies and gentlemen. We are about the only two people, Americans, you have ever seen who are still living with the kind of dose that we have had.	
	I thank the Department of Energy for holding these hearings here, so we can have these public forums, and for those of you who have taken the time tonight to come frequently so far to carry to us your intelligent messages. I admit to being extremely naive in this area except that I happen to be an expert in electromagnetic pulse. And I am familiar with some of the other aspects of radiation dosage.	
	I cannot see how any concerned citizen who is a rational person can draw any conclusion based on the information that we have heard tonight other than the fact that if we are given a modicum of truth	

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
	in all of the information that we have heard and I can present that we have that these reactors should be kept in cold standby for now.	
S-57-02	I wanted to convey to you one other item that is of great concern to me about these reactors. Earthquake planning by such august scientific bodies is a somewhat iffy thing even today. But the largest collection of American scientists who are fairly reliable at predicting them have granted us a 100 percent certainty of a 6.0 earthquake epicentered very close to these set of reactors that we are talking about tonight within the next 25 years. Now you might say that is well and good, 6, 8, 10, 12, what does that mean to us? I survived within about ten miles of the epicenter of a 7.5 earthquake at Headgun Lake in the Madison River Canyon in Montana in 1959, and went on to dig out many of the bodies. And my wife and I have just survived a 7.2 in San Francisco. I was on the third floor of a new \$44 million earthquake proofed building, and I want to tell you what that means. The building itself survived essentially intact. The interior was totally trashed including through no fault of ours all of the offices. I had the privilege of seeing 1000 pound safes flying ten and fifteen feet. And I got away from my computer terminal that I was working on just before it went right by my head and out of the window of my office. Living in Germany near the Czech border when we took this heavy dose from Chernobyl, we were fortunate to see another aspect of the folly of man and the masses of august bodies that we call our elected body politic. In this case, the German Federal Republic Government was so afraid of mass hysteria that they refused to admit that there was any radiation whatsoever for almost a full month after we were taking such heavy doses that deer were dying and numerous other animals and plants were showing really strange effects. And the German people were allowed to eat the green grocer's products that we know had incredibly heavy doses. So when threatened be it with the excuse of mass hysteria, our governments do not necessarily have a history of wanting to represent us. I see what I consider to be a minor representation here tonight from a population center that I understand is	The reactors at SRS were designed to withstand an earthquake with an acceleration of 0.2g, which is twice the estimated peak ground acceleration felt in the Site area during the Charleston earthquake of 1886. DOE is not aware of any credible scientific report that makes such definitive predictions of magnitude, location, and timing. (Please see EIS Section 3.3.2 and the response on Comment S-40-06 on design-basis earthquakes.)

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
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approximately 250,000 people. And I hear concern expressed by most of you that it does not really matter what we are saying tonight, because the decision has already been made.

Well, I am here to tell you that you better listen to what Mr. Gorbachev is saying right now and why he is running so scared. It does matter, it really does. There is a fellow named Sam Nunn in Washington and he accepts collect calls, and Sam does listen. And if you do not like what you think is being done to you or if you feel powerless, tell ten people tomorrow and have them tell ten what you have heard here tonight. I thank you all for your time.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-58	STATEMENT OF RUTH GARRETT	
S-58-01	MRS. GARRETT: I will be very brief. I know you are all tired and want to go home. We are the 50 percent who did not get the message until 6:30 tonight on the evening news. So I would like to complain that this was not well advertised. When we did come in, the slide that was on the screen was the one about the environmental impact. I read very fast and in several languages, but I did not get past number one, the slide went so fast. So having been away from Savannah for fifteen years, I can complain a little bit and be a little bit impolite in saying that I think we could have had more Savannahians here if we had been better informed. I had to call the television station to ask them where the meeting was, and there was some difficulty with that. So we have a lot of needs in Savannah, but we do not need this restarting. We do not want it, and we want you to take that word to Washington. Thank you.	Please see the response to Comment S-39-01 on public hearings.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-59	STATEMENT OF SUSAN DELANEY	
	MS. DELANEY: I am Susan Delaney, and I am a native of Savannah. I am a deacon in the Episcopal Church, but I am here to speak as an individual. I had the opportunity this past January to attend an international conference in Moscow. The hosts were the Supreme Soviet Government, the Soviet Academy of Sciences, and the Russian Orthodox Church. There were 1000 delegates from 83 countries, spiritual leaders, government leaders, business leaders, scientists, journalists, and people in the arts. And they all met to talk about the problems that this earth is facing.	
S-59-01	From the opening address of the Secretary General of the U.N., and through the addresses of our Senator Al Gore and Senator Claiborne Pell, to the closing address in the Kremlin by President Gorbachev, the consensus was that the Cold War is at an end, the arms race end is in sight, and the breaking of the Berlin Wall as a symbol of the breaking of walls everywhere. And the consensus was that our efforts now must all be put towards healing this earth that we all share. President Gorbachev suggested forming an international Green Cross that would go to environmental disaster areas. And he received a standing ovation when he said that he called for an end to the nuclear arms race once and for all. And I would like join with most of the people here tonight and call for an end to the Savannah River nuclear plant once and for all. Thank you.	Comments noted.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-60	STATEMENT OF EVANGELIN MAMALAKIS	
S-60-01	MS. MAMALAKIS: Yes, sir. My name is Evangelin Mamalakis. I am a lifelong resident of Chatham County. And I am here this evening to lend another voice of opposition to the Savannah River plant reactors restart. My concerns have been repeatedly voiced by others here this evening. The lack of need for further tritium production and nuclear missile production. The unnecessary consumption of such massive financial resources that our nation needs to care for its people. The philosophical concerns of continuing to generate implements of war.	Please see the response to Comment S-03-03 on the need for tritium and other nuclear materials. The need for nuclear weapons is beyond the scope of this EIS.
S-60-02	And the long history of the Savannah River plants failure to honestly inform the residents of this area of accidents, spills, equipment breakdown and failures, and plant mismanagement, that have all yielded radioactive pollution of the immediate Savannah River plant site and diffused pollution of the earth, air, and water in surrounding counties. We have been consistently informed that the introduction of such so-called low level toxic materials into our soil and water are below the levels detrimental to our health. Medically it is far from being in on the effect of lifelong exposure to and consumption of such contaminants to humankind, or its effect on the flora and fauna.	The extent of contamination from prior SRS operations is described in Section 3.7 of the EIS, and in annual environmental monitoring reports issued by DOE (WSRC, 1989). Section 4.1 presents projected environmental impacts from continued reactor operation. Also, please see the response to Comment S-03-01 on risks.
S-60-03	Along with my concern about such diffuse radioactive pollutants, I am additionally concerned about the synergistic effects of such pollutants with other toxic materials that are regularly dumped into our air and water in the Savannah community as well as similar communities across the country. There is no rationale for killing ourselves and our world degree by degree. I voice a no to the reactor restart as a means of claiming our right to qualitative personal community and global life. Thank you.	No synergistic effects of radiation and other toxic materials have been identified with the exceptions of cigarette smoking and radon daughter exposure in producing lung cancer in uranium miners.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-61	STATEMENT OF LANA MILLER	
S-61-01	MS. MILLER: My name is Lana Miller, and I am a resident of Portland, Oregon touring the country, and this is my first visit to Savannah. I would like to say that it is one of the most beautiful areas of the country that I have seen, and it still has some of the most primitive areas. It feels like you are very environmentally conscious here. And I have to commend you on preserving the wild areas and maintaining so many refuge areas in the barrier islands. And I support the people of Savannah in rejecting this restarting of the Savannah River project. I guess that is all I have to say.	Comments noted.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-62	STATEMENT OF JANIECE C. BRODHEAD 9 Flinn Drive Savannah, GA 31406 To Whom it May Concern, I am a mother with three young children, a business owner of a 12 yr old Savannah business and a concerned citizen. I have been encouraged by the strides our country has made towards peace. It's been exciting to see our whole planet working towards a safe environmental awareness. There is much to be positive for as far as an environmentally safe and peaceful future for my family.	
S-62-01	This leads me to the question as to why are we continuing to make and stockpile bombs? Is this necessary? We certainly have enough nuclear "protection" and enough radioactive <u>danger</u> stockpiled. To me the restart of SRP is unnessesary, dangerous and expensive. I don't relish the thought of living downwind and down the river from SRP. I feel like it isn't a safe facility and I feel like the production of more bombs is not needed and too expensive. Please consider this taxpayers voice - use my hardearned taxpayers money to work towards a peaceful and environmentally safe future for my children. Perhaps this is a cry in the wind but I don't choose to oil a war machine that is damaging to our environment and totally unnessesary. Will it take disaster to make changes? I pray not. Thank you for this opportunity to speak - Janiece Brodhead	The need for nuclear weapons is beyond the scope of this EIS.

C-510

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
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S-63	STATEMENT OF HELEN P. O'BRIEN P.O. Box 214 Cobbtown, GA 30420 912-684-5701 May 31, 1990	
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To: D.O.E.

S-63-01

I am opposed to any re-start of any reactors at Savannah River Site. Enough harm and destruction has already been created. We should spend the resources of our country creating life-giving and life-sustaining places instead of places that harm our citizens.

Comments noted.

I request that any money allotted to S.R.S. be for clean-up only.

Thank you,

Helen O'Brien

C-511

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-64	STATEMENT OF BENJAMIN J. GOGGINS P.O. Box 53 Tybee Island, GA 31328	
S-64-01	1) The plant is immoral. It is un-Christian. Christ wouldn't work there, pay for it, have hearings on it, make missiles from the plutonium. Come on - be Christian. 2) It's paranoid, mentally-ill. 55% of tax \$ goes for defense. You spend that % of your take-home pay, and see how mentally-balanced your neighbors feel you are.	Comments noted.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-65	STATEMENT OF WENDY R. GOGGINS P O Box 53 Tybee Island, GA 31328	
	Dear Sir,	
S-65-01	I want to say we need to concentrate on cleaning up the river & feed the poor & say enough to military spending. I feel I am representing at least 200 mothers who can't be here tonight to speak.	Comments noted.
	Sincerely Yours	
	Wendy R Goggins	

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-66	STATEMENT OF JOHN M. RAVAGE 200 West Jones Street Savannah, GA 31401 Statement made by John Ravage at the Savannah River Plant Hearings at the DeSoto Hilton in Savannah, GA, 31 May 1990. I have been marginally associated with nuclear energy for more than 25 years, first in writing operational materials for Westinghouse in the sixties, then as the editor of the Final Report of the Workshop on Alternative Energy Strategies at MIT under the direct supervision of Carroll Wilson, President Truman's appointee as the first general manager of the AEC, and finally in 1982 as associate director of the Governor's Energy Council in with responsibility for writing Pennsylvania Energy Policy.	
S-66-01	I am distressed that as the threat of nuclear annihilation at the hands of our enemies diminishes, the United States Government and its agencies appear anxious to take over that role by operating plants that do not meet the safety regulations promulgated to protect its citizens. Under the guise of military preparedness, it proposes to resume the production of Tridium that is unneeded at an installation that shares some frightening characteristics with Chernobyl.	Please see the response to Comment S-01-02 on safety.
S-66-02	This mindless continuance of unneeded production invites comparison with the Sorcerer's Apprentice, who, having learned the incantation to set the broom to carrying water, did not know how to stop it, nearly drowning in his own superabundance. Someone must issue the command to halt the production of superfluous bomb ingredients, despite the false claim of national security needs.	Please see the responses to Comments S-05-07 and S-13-02 on Chernobyl.
S-66-03	Personally, I would feel far more secure if money being spent to build more nuclear warheads were devoted to mothballing obsolete nuclear refineries and bomb plants. Far more people have been poisoned and killed, and more environmental damage has been caused by bomb testing and bomb building and by nuclear accidents than have been caused by acts of nuclear aggression since Nagasaki. The Environmental Impact Statement obscures more than it reveals, always in the name of national security. What it cannot	The need for nuclear weapons is beyond the scope of this EIS.

Table C-6. Public Comments and DOE Responses

Comment Number	Comment	Response
S-66-04	conceal is that all three plants have long since surpassed their life expectancy and are woefully deficient in their safety and in flagrant violation of safety practice required of all commercial nuclear plants. The record of the Nuclear Regulatory Commission is a sad tale of non-feasance, non-enforcement and nonsense and a lackadaisical attitude towards the health and well-being of neighbors. Arrogant disregard for first, the environment, second, for expert estimates of present nuclear arm requirements, as well as the safety of the region must stop. If the regulators won't do it, then a citizen's committee must be called into being, which committee to have access to all the data necessary to evaluate the degree of safety of plant operation and all its manufacturing and high-level waste disposal. The twin issues of nuclear armament and environmental quality are of too far reaching importance to be left to people whose principal concern is to perpetuate the status quo, which means their jobs, by ensuring employment for their constituents while ensuring the degradation of the thousands of acres of forest, miles of streams, and the air that millions breathe. I hope I did not live through the Depression on two continents, serve in World War II, survive both the seventies and the Reagan Era only to be subjected to radiation poisoning in my retirement here in Savannah.	As noted in Section 2.1.2.3.2 of the EIS, no life-limiting mechanisms have been identified for these reactors; also, please see the responses to Comments S-27-01 on safety regulation and S-01-03 on safety oversight.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-01	STATEMENT OF THE HONORABLE CANDY Y. WAITES	
C-01-01	I am Candy Waites, a citizen of Richland County and a member of the South Carolina House of Representatives. I hesitated to come today because I do not have technical comments to make, but fortunately there are others who will deliver those arguments. I had to come today for my daughter Robin. Today is her 21st birthday. She is celebrating it in the Soviet Union where she has been studying since February. Her letters are full of wonderful stories of new experiences, new Russian friends and breaking down old barriers. I had to come today for Robin and her new friend Tasha to ask why you are considering restarting the nuclear reactors to produce ingredients for weapons when the walls separating nations and peoples are coming down around the world.	The Department of Energy produces tritium (and other nuclear materials) as directed by the Nuclear Weapons Stockpile Memorandum (NWSM), which determines the need for defense materials, and which is approved by the President. The most recent NWSM, approved by President Bush on July 12, 1990, was used in calculating the demand for new production of tritium in Appendix A. In addition, Appendix A considers a potential reduced-need scenario for tritium. Because detailed information on defense need involves national security information, nuclear material requirements and the production requirements required to meet these demands are discussed in a classified appendix (Appendix A) of the EIS. This classified appendix was not distributed with the main document, but will be considered by DOE decisionmakers; it is available to those meeting security requirements. Unclassified information from Appendix A is included in Section 1.2 of the EIS.
C-01-02	Why are you taking incredible risks to restart these nuclear dinosaurs when we have been told over and over again that there are major problems with their safety? Why won't someone tell us the truth? Why do you make us feel unAmerican when we speak out for a safe and healthy environment? We are not the enemy. We are the people who live in and love this country.	Sections 2.1.2.8.2 and 2.1.2.7 of the EIS address the concerns expressed about reactor safety and the reactor modifications to be completed as safety enhancements both before and after resuming production. As stated by Secretary Watkins on several occasions: "restart of any of the SR reactors will not be authorized until I am

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-01-03	This chronology of events states that in 1978 the Armed Services Committee panels reported "galloping obsolescence" of the nuclear weapons production complex. DOE acknowledged in its fiscal '81 budget request to Congress that degradation was "serious" and that radiation exposures to personnel were reaching unacceptable limits. For the next twelve years the stories are the same. The players change, but the gruesome facts never change. There is not time today to read the nine page chronology which justifies my feelings, but I shall attach it to my remarks.	personally satisfied that they can be operated safely." (Memo, Secretary of Energy Watkins to Secretary of Defense Cheney, April 1989.)
	The more I read, the more frustrated I get. Then after the frustration comes fear. Yes fear, because no one seems to be listening. How do you expect the people to trust the Department of Energy when we have been lied to or told half truths or pushed aside or ignored for years and years and years? Why is it so hard to make big government understand that all we the people want is the right to lead our lives in a safe and healthy environment?	DOE is required to consider all substantive comments on the Draft EIS and in preparation of the Final EIS (40 CFR 1500-1508).
	A reporter recently said he looked for facts and not emotionalism.	
	Fact: 8/17/89 Westinghouse announced that half of the construction welders at SRP were improperly certified...275 of 550 welders will have to be recertified.	
	8/25/89 "The fragility of the antique reactors at SRP is going to be hanging over our heads like the Sword of Damocles until the year 2005." Secretary Watkins.	
	10/25/89 Procedural errors and reporting problems continue [at SRP] and indicate that an emphasis on safety of operations is not yet pervasive.	
	John Ahearne letter to Secretary Watkins saying that the Westinghouse restart schedule may mean "that little more than the minimum upgrades will be done prior to restart."	
	12/13/89 "Progress made to date on improving conduct of operations is inadequate." Paul Kaspar.	
	It is very difficult to follow the continuing saga of problems at SRS without getting emotional. Something is very wrong with our	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-01-04	system when the people have to sue the Department of Energy in order to get an environmental impact statement before the restart of the reactors.	In December 1989 Energy Secretary Watkins informed the Congressional Armed Services Committees in a letter "that because the decisionmaking process will be enhanced by the information and opportunity for public comment presented by the EIS, the Department will complete the EIS before it makes any decision to resume operating the defense production reactors at the Savannah River Site."
C-01-05	Not only do the people want to know that the aging reactors are safe, but we want to know why we are going to spend a billion dollars for their restart. In today's world of warming relations between the US and the Soviet Union, do we really need to risk our health and safety to produce ingredients for more weapons? Can you justify this risk and this expenditure to Robin and Tasha?	The need for nuclear weapons is beyond the scope of this EIS. Please see the response to Comment C-01-02 on safety.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
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ENERGY
RESEARCH
FOUNDATION

REACTOR SAFETY AT
SAVANNAH RIVER PLANT:
A CHRONOLOGY,
1978 - MARCH 1990

RESEARCH NOTES

A SERIES OF FACT SHEETS PREPARED FOR THE PUBLIC

The Savannah River Plant (SRP) reactors produce plutonium and tritium for use in nuclear weapons. They have been shut down since Summer 1986, for safety upgrades, maintenance, and the establishment of new operating procedures. It is unclear when, if ever, the reactors can be restarted. Below is a chronology of events leading up to the shut down, and of the Department of Energy's (DOE) efforts to restart the reactors.

1978: Armed Services Committee panels reported "galloping obsolescence" of the nuclear weapons production complex. DOE acknowledged in its fiscal '81 budget request to Congress that degradation was "serious" and that radiation exposures to personnel were reaching unacceptable limits.

March 1981: Report of DOE's Nuclear Facilities Personnel Qualification and Training Committee to assess implications of the Three Mile Island accident for DOE reactors. John W. Crawford, Chairman (Crawford Report): "A number of significant deficiencies exist in DOE's reactor safety management activities... Many of the 'THI Lessons Learned' have not been adequately addressed or applied in DOE reactor programs."

May 1981: Officials discovered 20-year-old cracks at P and C-reactors in drainpipes which were designed to remove contaminated cooling water from reactors. Failure of these pipes could have caused backup of contaminated water into reactor buildings during an accident.

August 1981: General Accounting Office (GAO) report, "Better Oversight Needed for Safety and Health Activities at DOE's Nuclear Facilities," found that DOE was not providing adequate emergency preparedness guidance, taking "very limited" if any actions to assure that older facilities meet current safety criteria and standards, and stated that DOE has "little assurance" that information concerning radioactive releases from its facilities is accurate and reliable.

June 1985: C-Reactor shut down following normal operating cycle during which as much as 18 gallons a day of highly radioactive water leaked from the reactor vessel. At least twelve cracks were eventually found, some 45 inches long. After several failed attempts to repair the cracks during 1986, DOE decided to abandon efforts to restart the reactor.

For more information contact: Energy Research Foundation, 537 Harden Street, Columbia, SC 29205, (803)256-7238. Printed on recycled paper.

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

June 1986: GAO report: "Safety Analysis Review for DOE's Defense Facilities Can Be Improved." Safety Analysis Reviews (SAR) establish the basis for the operator to determine that its facility can operate safely, identify potential problem areas, compare facility design against established safety criteria, and analyze potential accidents. The GAO report found that the extent of comparison to safety standards varied widely in reports from different facilities, and that they used different approaches to identify and analyze potential accidents - e.g., one review analyzed consequences of the worst earthquake expected in 840 years, another used 8,000 years. The report noted the lack of an independent review process.

October 1986: DOE Headquarter's Quality Assurance (QA) report raised questions about the effectiveness of SRP's entire QA program and plant safety, citing cumbersome chain of command, poor staffing, and failure to follow up on problems found. Technical Safety Appraisal found inadequate fire protection systems, excessive releases of tritium and heavy water from the reactors, and inadequately trained and tested personnel.

October 1986: A panel of experts convened by Energy Secretary Herrington to assess reactor safety at Hanford, Washington (the Roddis panel) found serious deficiencies in DOE's QA programs and management, and cited self-regulation as the cause (cf., the Crawford Report, above).

January 1987: Dr. Gordon Thompson's report at the Richland County (SC) Council emergency planning hearings: "I still regard the SRP reactors as quite primitive in terms of safety features." His report described a theoretical accident at SRP (50% core materials released to the environment) in which people living 60 miles or more from SRP in the plume path of the accident would run a significant risk of thyroid cancer and might have to leave their homes for up to 30 years.

March 12, 1987: GAO report released at Congressional hearings convened by Senator John Glenn revealed that SRP reactors ran for six years at power levels which might have overwhelmed the emergency cooling systems during an emergency. The power levels were lowered by 25% during 1986 when DuPont engineers discovered mistakes in earlier calculations. The GAO report also cited inadequate and outdated testing for cracks in reactor walls and lack of attention to identified problems at SRP.

March 20, 1987: Power levels for all three SRP reactors were reduced to 50%. This followed the release of a March 9 letter from the chairman of a National Academy of Sciences panel convened by Energy Secretary Herrington to study reactor safety which warned that SRP reactors were still operating at unreliable power levels.

April 1987: DOE reported that SRP reactors do not measure up to a number of Nuclear Regulatory Commission (NRC) design standards, and that plant engineers need to conduct further testing to make sure the plant is safe.

October 1987: A National Academy of Sciences reactor safety report found that: DOE does not know how reactors would behave during an accident; filter and confinement systems might not work; reactors show signs of "acute aging that could affect safety"; and a high degree of confusion of safety objectives exists. The report recommended that reactors remain at reduced power levels until better models are developed to monitor emergency cooling systems, and recommended independent oversight authority.

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

October 1987: DOE announced formation of the Advisory Committee on Nuclear Facility Safety (ACNFS) to advise the Secretary of Energy. In January, John Ahearn, former NRC Chairman, was named to head the ACNFS.

February 1988: L-reactor power out by another 10%.

March 1988: Richard Starosteki (deputy assistant secretary for environment, safety, and health) called SRP's earthquake program inadequate.

April 1988: L-reactor shut down after independent inspection found that a brace supporting part of the emergency cooling system was non-standard; i.e., there was a discrepancy between the actual installation and original drawings.

April 1988: P-reactor shut down for visual inspection of seismic braces following L-reactor discovery. Braces supporting emergency cooling systems in P-reactor were replaced or modified during May. Other discrepancies were found, including a moderator drainage system not connected as shown in blueprints.

April 1988: K-reactor shut down for previously scheduled annual maintenance (estimated 130 days).

May 20, 1988: R. Starosteki, in a letter to Paul Kasper (DOE manager at SRP): "It appears that the seismic upgrading that has been accomplished (and is now underway) has been a piecemeal, largely reactive response...that has been seriously neglected."

June 1988: R. Starosteki, at an ACNFS meeting: "The equipment is not built according to the way designers intended."

August 7, 1988: Operators attempted to restart P-reactor but were unable to do so because of a build-up of helium in the reactor core. Operators continued to pull out control rods - thus boosting power - even though the reactor was not responding according to their calculations, and they did not know why. After recalculations and an unexplained power surge, DOE ordered SRP operators to shut down the reactor on August 17 and began an investigation.

August 28, 1988: DOE officials said that the P-reactor could not be restarted for another 30 to 45 days and that the extra time was needed to implement administrative and technical changes necessary to ensure safety.

September 30, 1988: Congressional committees released a 1985 SRP memo describing numerous reactor accidents at SRP between 1957 and 1985. The accidents were among the most serious ever documented at U.S. nuclear reactors; several involved fuel melting.

October 8, 1988: A top Pentagon official: "If we don't (restart the Savannah River reactors soon), there will be very serious consequences for our ability to maintain our nuclear deterrent. To have these reactors not operational is tantamount to unilateral nuclear disarmament."

C-521

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	October 11, 1988: Energy Secretary Herrington announced that he hoped to begin a phased start-up of K-reactor in December, reaching 50% capacity over about a month. Herrington also announced intentions to restart L-reactor in March and P-reactor in July (the switch in focus from P to K-reactor is attributed to the 1985 SRP memo described above).	
	October 1988: The Defense Authorization Act passed Congress with an amendment establishing the Defense Nuclear Facilities Safety Board (DNFSB) with five members appointed by the President. The independent board would be responsible for overseeing health, safety, and the environment at some DOE facilities.	
	October 1988: DOE contractor Nuclear Utility Services report (called the Hamric report for the chairman of the task force): SRP suffers from a "flawed management culture" that undermines safety, impedes communications, and deviates from practices common to well-run nuclear plants. The report stated that serious problems exist at every level of SRP's management and reactor staff, reactor operators were not adequately trained, and operators' perception of their safety role was too limited. Operating conditions and practices failed to meet commercial safety standards in at least 48 "problem" areas. The rate of forced shutdown of SRP reactors was several times higher than would be tolerated by the NRC at commercial reactors.	
	November 10, 1988: R. Stanoszek questioned the ability to restart K-reactor in December: "We have been making insufficient progress at the site to meet such a date."	
	November 25, 1988: DOE report, "Savannah River Plant K-Reactor Restart Strategy," outlined more than 160 separate tasks to be completed before restart. The report also stated that "national security needs dictate a decision to operate a reactor before completion of the long-term portion" of the reactor safety improvement program.	
	November 29, 1988: Secretary Herrington: "We are hoping to start [the K-reactor] in the spring [or] summer." Restart of P and L reactors would follow.	
	December 5, 1988: A Defense Department spokesman: "If the [SRP] reactors are not restarted by the end of the summer, you would have to cannibalize some weapons to keep others active."	
	December 8, 1988: Cracks reported in L-reactor cooling water pipe. DuPont scientists had removed the pipe in October 1987, when previously identified cracks grew deep enough to require replacement. In March 1988, technicians examined the impaired section of pipe, and discovered evidence of unsuspected cracks where the pipes had been welded to a support column. DOE and ACFNS officials criticized DuPont for not reporting these cracks until December.	
	December 9, 1988: Troy Wade (DOE deputy assistant secretary for defense programs) told reporters that national security requires restarting one SRP reactor by mid-summer.	
	December 13, 1988: Energy Research Foundation, Natural Resources Defense Council, and a coalition of 111 suits against DOE to compel the completion of an environmental Impact Statement (EIS) prior to restart of any reactor at SRP.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	December 13, 1988: New cracks reported which affect the main cooling systems at L-reactor. The cracks occurred in the "base metal" and were not associated with any welds. DOE officials charged that improper installation techniques may have caused these cracks, raising concerns about similar installation practices at other sites. Investigations began at other sites.	
	December 14, 1988: ACFNS rejected DOE's K-reactor restart plan, citing inadequate inspections and lingering questions about power levels, calling it a "blueprint fraught with inadequacies... We have broad concerns regarding safety philosophy, the overall criteria for restart, and management."	
	December 18, 1988: Cracks reported in cooling system at K-reactor.	
	December 18, 1988: SC Representative John Spratt, a member of the House Armed Services Committee: "My understanding of the need for tritium is that it's not that urgent....with 20,000 warheads, we really do not suffer in the short run."	
	December 20, 1988: Internal DuPont memo, dated April 19, was released. The memo described a series of cracks and leaks - some of them serious - that occurred in critical cooling pipes over 35 years and detailed how DuPont installed defective pipes, welding rather than returning them. Repaired pipes were found to have 60 to 100 new cracks as a result of welding techniques. Due to the cracks, cooling water leaked out on several occasions and forced shutdown of reactors. R. Starostecki criticized DuPont for failure to test comprehensively the entire cooling system and to identify the causes and severity of cracks: "It's a complete breakdown in quality control over procurement."	
	December 20, 1988: DOE estimated repairs to reactors will cost \$350 million and be completed in 1990.	
	December 22, 1988: Energy Secretary Herrington said that K-reactor will undergo ultrasonic testing prior to restart. Earlier in the year DOE officials had said that such testing was not necessary. The testing was estimated to delay K-reactor restart until June.	
	January 5, 1989: DuPont announced that engineers had discovered and were monitoring 27 cracks in reactor cooling systems.	
	January 22, 1989: Improper testing procedures at K-reactor - the "water hammer incident" - caused accidental rupture of several large valves in cooling systems.	
	February 2, 1989: At a Senate Armed Services Committee hearing R. Starostecki stated that progress since August "has not been encouraging... I'm skeptical [that K-reactor could be started this year]. From a skeptic's point of view, a lot of things would have to happen quickly, and they are not happening." John Ahearn (ACFNS chairman) told the Committee: "The closer we look, the more problems we find." Ahearn questioned whether DOE was capable of bringing SRP's reactors up to commercial standards. Troy Wade told the Committee that DOE efforts to extend the tritium supply would avoid any crisis as long as restart began in 1989, but that "if a reactor is not restarted this year, then the supply of tritium could be reduced to such an extent that the nuclear stockpile will be affected."	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	February 8, 1989: DOE found more cracks in K-reactor cooling pipes, bringing the total number of cracks found in all three reactors to 52.	
	February 16, 1989: DOE letter to Senate Subcommittee on Energy and Water Development, earmarked \$108 million extra for restart, saying "These funds are what's needed to get the job done."	
	February 22, 1989: John Ahearne told a House subcommittee that DOE officials have "gotten so heavily involved in the restart of the reactors that they've had to put aside the development" of a nuclear safety policy which would raise safety consciousness at SRP. He also said it is "probably going to take a lot longer than a year" to prove that the SRP reactors can withstand the most serious plausible accident they are expected to face. Troy Wade testified before the subcommittee: "if we are unable to restart this calendar year, it [the tritium shortage] will become a crisis."	
	March 3, 1989: A DOE report on the January water hammer incident found that operations remain "clearly deficient and did not reflect that lessons [were] learned" from earlier problems. The report also stated that "damage, which could cost as much as \$2 million to repair, is unlikely to hinder efforts to resume production of tritium by the end of the year, because time for unexpected setbacks was built into the schedule."	
	March 15, 1989: DOE responded to the EIS lawsuit (see December 13, 1988). DOE said they would initiate an EIS process on operation of the reactors, but that restart was a separate issue and therefore not contingent on completion of the EIS.	
	March 21, 1989: New Secretary of Energy James Watkins told a House subcommittee that he would present President Bush with a master plan for restart sometime in April, with no more "foolishness."	
	March 24, 1989: Sam Nunn (Chair, Senate Armed Services Committee): "We probably can make it another 18 months or two years [with the current supply of tritium]. But even then, there are steps we can take if necessary...to make sure we have enough tritium, even if we haven't started the reactors back."	
	March 28, 1989: Westinghouse, preparing to take over the SRP operating contract from DuPont, and DuPont said SRP reactors can be safely restarted without ultrasonic testing of the reactor vessels.	
	March 1989: President Bush missed the March deadline to name members to the new DNFSB.	
	April 1, 1989: Westinghouse took over the SRP operating contract from DuPont.	
	April 13, 1989: Troy Wade told a closed door meeting of a House Armed Services panel formed to oversee nuclear production facilities (chaired by SC Representative John Spratt) that DOE expects to restart one SRP reactor in December, and that if one of the reactors isn't started by December, he would quickly develop a "pretty severe" tritium shortage.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	April 27, 1989: Secretary Watkins, in a letter to congressional leaders, moved back the timetable for restart from 1989 to the first quarter of 1990.	
	April 1989: DOE held public scoping hearings for the reactor safety EIS.	
	May 2, 1989: DOE announced that the two heat exchangers at K-reactor damaged during the January water hammer incident would be replaced with exchangers "not new, but much more recent than the '50s."	
	May 17, 1989: Secretary Watkins told a Senate Armed Services Committee that he cannot get qualified people to oversee restart because of low pay and ethics law restrictions.	
	June 26, 1989: Westinghouse submitted a report to DOE outlining a plan for restart which targeted a restart date for K-reactor of September 1, 1990, and projected a cost of at least \$1.66 billion for all three reactors. James Moore, Westinghouse/SRP President, stated in an accompanying letter that "delay and extra cost for repairs were a result of initial difficulties engineers had in understanding the magnitude of the changes" needed to make the reactors safe. He stated that Westinghouse personnel had studied plant operations, condition of equipment and extent of repairs needed, and that the current plan and schedule reflect a better understanding of the reality as it currently exists.	
	June 27, 1989: Secretary Watkins outlined a 10-point plan for assuring safety and environmental protection at DOE facilities. In discussing this plan, Watkins stated that the managers and supervisors at DOE don't have the technical skills to supervise the operation of the plants, and that his efforts are slowed because of an insufficient number of technically qualified people at DOE. Watkins said he is forced to make his own assessment because of serious management flaws at DOE, and that he often lacks the data base he needs. He reported involving himself in every major decision because of unreliably optimistic information.	
	July 17, 1989: Secretary Watkins responded to Westinghouse in a letter criticizing the restart plan and demanding a faster schedule.	
	July 18, 1989: DOE officials, testifying before the Soratt panel, strongly opposed efforts to strengthen the role of the DNFSB. After the hearing, officials told reporters that "within a couple of weeks, not far beyond the first of August" the restart date for SRP's reactors will be set.	
	July 28, 1989: DOE and Westinghouse announced they would present a restart plan by September.	
	August 2, 1989: Secretary Watkins stated in an interview with the <u>Augusta Chronicle</u> : "The cultural problem is so major that I could never face a congressional committee or a NRC-type of body and say with any confidence that I could operate safely." He also said, "We all know that old, tired reactors, especially ones that are sick like this...could run afoul of unforeseen technical issues that we don't even identify now." Watkins concluded that, though the U.S. "currently faces a critical tritium shortage," measures to extend the stockpile should hold until next year.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	August 17, 1989: Westinghouse announced that half of the construction welders at SRP were improperly certified because of an "administrative" blunder. Two-hundred-seventy-five of 550 welders will have to be recertified. A Westinghouse audit showed that records and documentation for critical welds were not always complete.	
	August 25, 1989: Secretary Watkins told reporters that: "The fragility of the antique reactors at SRP is going to be hanging over our heads like the Sword of Damocles until the year 2005."	
	August 31, 1989: A DOE official told a reporter, "Every time we've jiggered things around, we've found a gram [of tritium] here and a gram there, and pretty soon a kilogram."	
	September 6-7, 1989: Members of the ACHFS met at SRP for briefing on restart progress. Members of the Committee criticized Westinghouse's plan to put off ultrasonic testing of the K-reactor vessel until its first outage after restart. Westinghouse officials took the position that if no cracks were found in the P or L-reactor vessels (which would be tested before K-reactor is restarted) it would be an indicator for K-reactor as well.	
	September 7, 1989: Secretary Watkins announced that DOE would accept the Westinghouse plan (see June 26, 1989) for restart, which calls for K-reactor to begin low power testing in the third quarter of 1990, with production beginning during the fourth quarter if all goes well. Secretary Watkins stated that because the restart schedule contains "uncertainties," a more precise date would not be set until the spring of 1990. DOE refused to say whether it would complete ultrasonic testing of the K-reactor vessel before restart, or complete the reactor safety EIS before restart.	
	September 1989: According to SC Representative Butler Derrick, DOE plans to request an additional \$250 million in FY 1990 for restart, bringing the total amount budgeted for restart activities to almost \$1 billion.	
	September 16, 1989: DOE announced that a "potential indication in excess of nine inches was noted in the area of a welded seam" in P-reactor vessel during ultrasonic testing. Therefore Secretary Watkins "has directed that all three tritium producing reactors...will receive ultrasonic testing prior to their restart. One DOE official estimated that this change might delay restart of K-reactor by a month or more.	
	September 29, 1989: DOE reported that the "anomaly" in P-reactor was an "existing weld repair performed at the time of tank fabrication," which will not have adverse safety implications.	
	October 17, 1989: DOE announced that ultrasonic testing of P-reactor was completed and that no cracks were found. Testing of K-reactor is to begin in mid-January, followed by L-reactor in mid-May.	
	October 19, 1989: According to the <u>Augusta Chronicle</u> (which obtained a declassified copy of the four-volume Westinghouse restart plan), basic operating costs for the reactors will almost double by the time they are restarted.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	October 25, 1989: John Aheerne, in a letter to Secretary Watkins: "Procedural errors and reporting problems continue [at SRP] and indicate that an emphasis on safety of operations is not yet pervasive." Aheerne was critical of omissions in the training program of both DOE and Westinghouse personnel. The letter said that the Westinghouse restart schedule may mean "that little more than the minimum upgrades will be done prior to restart. The ambitious program to start all three reactors over a period of 6 months will...require a large number of well-trained, competent people who may not be available."	
	October 25, 1989: Appointees to the DNFSB were sworn in.	
	November 30, 1989: Westinghouse made a formal recommendation to restart the reactors at 50% of full power, hoping to increase to 100% eventually. Secretary Watkins is expected to make a final decision about the date of restart and initial power levels next spring.	
	December 13, 1989: DOE gave Westinghouse 52.5% of a possible \$7.5 million performance award fee for Westinghouse's first six months managing SRP. Among the problems cited were: the intentional disabling of a radiation monitoring alarm, two incidents of personnel found asleep on the job, and basin overflows in two reactor areas. Paul Kaspar: "Progress made to date on improving conduct of operations is inadequate."	
	December 15, 1989: In a letter sent to members of the House and Senate Armed Services Committees, Secretary Watkins announced that "because the decision-making process will be enhanced by the information and opportunity for public comment presented by the EIS, the department will complete the EIS before it makes any decision to resume" production at SRP.	
	December 26, 1989: GAO report on SRP's earthquake protection program: the reactors will not meet NRC standards before restart, some safety-related systems still have not been tested to determine if they meet current seismic standards, and in the event of the worst earthquake reasonably expected to occur at the site the reactors "could threaten employees and the public with releases of radiation."	
	January 23, 1990: ERF and NROC charged that the DNFSB was violating two federal laws by holding closed meetings, failing to release its records to the public, and neglecting to adopt regulations governing public participation. The groups announced their intention to sue the Board if efforts to comply with the "Sunshine Act" and the Freedom of Information Act were not taken by February 14.	
	January 24, 1990: Ultrasonic testing of the K-reactor began.	
	January 29, 1990: DOE's "Tiger Team" began its investigation of SRP. The Tiger Team was established by Secretary Watkins to review operations in DOE's weapons complex. The Tiger Team will examine SRP's environment, safety and health management programs, and reactor support facilities, but will not review SRP's reactors.	
	February 7, 1990: DOE reported "a release of approximately 20 gallons of heavy water at K Reactor during maintenance activity."	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	February 23, 1990: Watkins, in a letter to the House Appropriations Committee, requested an additional \$233 million to keep the restart program on schedule.	
	A DNFSB report concluded that "DOE standards for training of reactor plant operators and supervisors at Savannah River have not been adequately determined and specified." The report made 6 recommendations, including: that DOE "determine and specify the qualifications that reactor plant operators and supervisors will be required to demonstrate" prior to restart; and that DOE speed up its program to "assure that as-built drawings of safety-related systems are available..."	
	March 4, 1990: Congressman John Spratt: "if there is any additional slippage [in the restart schedule], there apparently will be a need to cannibalize certain weapons in the arsenal in order to obtain tritium for new weapons coming on-line....The weapons being depleted would be more than replaced with the capability of new weapons."	
	March 6, 1990: A GAO study found that, between 1982 and 1987, of 71 reactor-related events categorized by DuPont as "having significant consequence or hazard potential" only 28 were reported to DOE.	
	March 8, 1990: ERF and NROC filed suit against the DNFSB for failing to comply with laws to ensure open government and public accountability (see January 23, 1990).	
	March 13, 1990: A briefing paper intended for Secretary Watkins, which was inadvertently made public, described several problems at DOE facilities, including: discovery of 3 bare, live wires in P-Reactor that posed an "imminent danger"; and missing seismic support u-bolts from a safety system in L-Reactor.	
	Westinghouse officials told Watkins that the restart program remains on schedule; Watkins said he would announce an official restart schedule in April.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-02	STATEMENT OF THE HONORABLE HARRIET KEYSERLING	
	I am Harriet Keyserling, and I represent a portion of Beaufort County in the South Carolina Legislature. I have come before SRS panels at other hearings to comment on the restarting of the K, L, or P Reactors.	
C-02-01	At those times, I have urged that you not start up these reactors until an EIS is completed, that the Department use as rigid standards for defense reactors as are demanded of commercial nuclear reactors, that the K reactor not be started up until the cooling towers are operating and that there be independent oversight of the Savannah River Site operation.	Please see the response to comment C-01-04 on operation of the SRS reactors. Although DOE is not required by statute to use NRC standards for commercial reactors, it does follow standards that are comparable to those of the NRC, and are more appropriate for its reactor types and uses. Until December 31, 1992, DOE would operate K-Reactor under an SCDHEC Consent Decree (84-4-W) that allows thermal discharges. Independent oversight of SRS is provided by the Advisory Committee on Nuclear Facility Safety (ACNFS) and the Defense Nuclear Facilities Safety Board (DNFSB); the latter organization has statutory authority granted by PL 100-456.
	Today I am here because my constituents and I are alarmed by recent reports citing the radioactivity from tritium in the Savannah River, our major source of drinking water. Personally, I do not have the scientific background needed to understand all the implications of your EIS; however, I have read, and understand, some of the scientific analysis by others, and it gives me great concern.	
C-02-02	I read that releases of tritium at SRS on an annual basis are more than 100 times the releases at Hanford, Washington. This is understandable because Hanford does not produce tritium. But what is not understandable is that at Hanford, there is an assessment underway of historical radiation doses, but there is no such study for SRS where the needs seem greater. There is a maximum concentration of tritium at the Beaufort-Jasper water treatment plant. We need to know what this means in terms of the health and safety of the people of Beaufort.	DOE reports the concentrations of tritium in the drinking water at the Beaufort-Jasper water treatment plant in its annual environmental monitoring reports, which serve as support documents to the Draft EIS (WSRC, 1989). The concentrations are substantially below EPA drinking-water standards of 20,000 pCi/L. The concentrations of tritium result in a collective population dose to downstream users of Savannah River water of 3 person-rem per year or 0.13 millirem per year to an individual (1988 doses). EPA standards permit an individual dose of as much as 4 millirem per year in drinking water (40 CFR 141.16).
C-02-03	According to Dr. Karl Z. Morgan (former Director of the Health Physics Division at Oak Ridge National Laboratory) tritium's biological harm is five times greater than the Energy Department's guidelines indicate. Your EIS does not report the degree to which tritium released from SRS permeates the surrounding environment. For instance, what is the implication for us that tritium is also found in our rainwater. Of 495 sites studied around the country, of the top ten samples with the most picocuries per liter, five came from Barnwell, including the one with the highest count. Another study reports that the EIS does not adequately comment on the release and transport of other specific radionuclides such as	Radiological surveys of milk, food, drinking water, rainwater, soil, vegetation, and sediment comprise a

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	tritium, Cobalt 60, strontium 90, cesium 137, plutonium, carbon 14, and iodine, some of which invade milk, food and drinking water. The EIS fails to note that risks posed by future operations can't be separated from the accumulating risk to people who have been exposed to SRP releases for over three decades.	significant fraction of the SRS Environmental Monitoring program. Rainwater, soil, and vegetation sample collection and analysis are crucial in quantifying the deposition of radioactive materials from routine and nonroutine atmospheric releases from SRS, as well as the deposition of worldwide fallout from atomic weapons testing and unusual occurrences such as the Chernobyl incident. The operational details and results of these programs are given in the annual environmental monitoring reports cited above, which confirm the very small doses received by the public from all pathways of exposure.
C-02-04	What are those risks to the people who have lived in Beaufort during that period? What we do know is there is now ten times as much tritium around Beaufort, which is downstream from SRS, than in Augusta, Ga., which is upstream. How long has it been this way? How much are we accumulating in our bodies? How can we stop it?	DOE presents estimated normal operating and accidental exposures to neighbors and downstream water users accumulated during the period from 1954 to 1989 in Section 3.7.1.2 of the EIS. As indicated in that section, the total effective dose equivalent to a water user over that total period (assuming the Beaufort-Jasper Water Treatment System had been in place from the beginning) would have been about 20 mrem; the total dose equivalent from natural background over that period was about 10,600 mrem. Section 4.1.6 addresses the potential additional risk to human health resulting from the continued operation of K-, L-, and P-Reactors. Independent agencies have been (and are) evaluating the health effects of past operations, as described in Appendix B.1.5; no significant health impacts on the general public have been identified.
C-02-05	In the May 10 edition of the Hilton Head Island Packet, an article on the Department of Energy EIS reports, "The DOE study said restarting the plant's nuclear reactors will lead to 'excess cancer fatality' within a 50-mile radius of SRS and downriver near the coast. But no statistics or explanation was provided." This is unacceptable to the people of Beaufort. We want statistics and we want explanations.	Table 2-3 of the EIS summarizes the excess cancer fatalities resulting from operating K-, L-, and P-Reactors and from the alternatives. The EIS contains more detailed information on this subject in Section 4.1.2 (for normal operation), 4.1.3 (for reactor accidents), and 4.1.6 (for cumulative impacts of all SRS and neighboring facility releases). The calculated risk from drinking water taken from the Savannah River without tritium removal, is an additional 0.0038 fatal cancer per

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
		year (or 1 additional cancer fatality every 260 years) in the water-using population of 317,000 to be served in the future in Port Wentworth and Beaufort-Jasper (Section 3.4 of the EIS). An average U.S. population of this size would be expected to have about 600 cancer deaths <u>each</u> year from all causes.
C-02-06	Your EIS needs to deal with the level by which the Savannah River is being polluted by tritium, and a study of alternatives to this pollution -- by studying, for instance, the cost and feasibility of a special treatment plant at the source, or a treatment plant at the Beaufort-Jasper Water Authority which distributes the Savannah River water.	Section 4.5.3 of the EIS describes the processes considered for detritiation of the heavy-water coolant/moderator, which is the source of the reactor-origin tritium discharges, their estimated costs, and the dose-reduction benefits. As that section indicates, the cost per unit collective dose (and health risk) averted greatly exceeds the guidelines used by NRC to judge the need for reductions in effluents from commercial powerplants (NUREG 1.110).
C-531 C-02-07	Although the intent of these hearings is that they should be a tool for making decisions, many of us wonder if the process of weapons plant hearings is not a charade, if the decisions have already been made. It is upsetting to hear Secretary Watkins say there are dangers but we have no choice but to get on with producing tritium.	Please see the response to Comment C-01-03 on public comments.
C-02-08	As our foreign policy changes, shouldn't our tritium needs also be evaluated? Are they absolute? It seems that nothing we say can compete with the national security needs. Despite this, we will keep pushing for an EIS which will include <u>all</u> the facts which are relevant and crucial in the Beaufort area.	Please see the response to Comment C-01-01 on the need for tritium.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-02-09	ADDITIONAL COMMENTS OF HARRIET KEYSERLING DISTRICT NO. 124-BEAUFORT COUNTY BOX 1108 BEAUFORT, S.C. 29901	
	Mr. Steve Wright Director, Environmental Division U. S. Department of Energy P O Box A Aiken, SC 29802 Dear Mr. Wright, When I spoke at the Columbia hearing on the Savannah River EIS, I tailored my remarks to fit the five minutes allowed. I would like to enter into the record my original draft which covers some other thoughts I have. I would appreciate your replacing my spoken remarks with the enclosed, if that is possible, or just adding this statement to the other. I hope it is not too late to do this. Sincerely, Harriet Keyserling [Original draft of Harriet Keyserling.]	DOE has discovered no substantive differences between this statement and the remarks given in testimony by the Honorable Ms. Keyserling.

C-532

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
Comments on EIS for Savannah River Site Before Editing for June 6th Hearing		
	I am Harriet Keyserling, and I represent a portion of Beaufort County in the South Carolina Legislature. In the past, I have come before SRP panels to comment on the restarting of the K, L, or P reactors. At those times, I have urged that you not start up these reactors until an Environmental Impact Statement (EIS) is completed, that the Department use standards for defense reactors that are as stringent as those demanded of commercial nuclear reactors, that the K reactor not be started up until the cooling towers are operating and that there be independent oversight of the Savannah River Site (SRS) operations.	
	Today I am here because my constituents and I are alarmed by recent reports citing the radioactivity from tritium in the Savannah River, Beaufort's major source of drinking water. Personally, I do not have the scientific background needed to understand all the implications of your EIS; however, I have read, and understand, some of the scientific testimony of others, and it gives me great concern.	
	I read that releases of tritium at SRS on an annual basis are more than 100 times the releases at Hanford, Washington. This is understandable because Hanford does not produce tritium. But what is not understandable is that at Hanford, there is an assessment underway of historical radiation doses, but there is no such study for SRS where the need seems greater. There is a maximum concentration of tritium at the Beaufort-Jasper water treatment plant. We need to know what this means in terms of the health and safety of the people of Beaufort.	
	According to Dr. Karl Z. Morgan (former Director of the Health Physics Division at Oak Ridge National Laboratory) tritium's biological harm is five times greater than the Energy Department's guidelines indicate. Your EIS does not report the degree to which tritium released from SRS permeates the surrounding environment. For instance, what is the implication for South Carolina that tritium is also found in our rainwater? Of 495 sites studied around the country, of the top ten samples with the most picocuries per liter, five came from Barnwell, one of which had the highest count. Another study reports that the EIS does not adequately comment on	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	the release and transport of other specific radionuclides such as tritium, Cobalt 60, strontium 90 in our milk, cesium 137 in our fish, plutonium, carbon 14, and iodine, some of which lodge in our milk, food and drinking water. The EIS fails to note that risks posed by future operations cannot be separated from the accumulating risk to people who have been exposed to SRS releases for over three decades. What are those risks to the people who have lived in Beaufort during that period? What we do know is there is now ten times as much tritium around Beaufort, which is downstream from SRP, than in Augusta, Ga., which is upstream. In the May 10 edition of the Hilton Head Island Packet, an article on the Department of Energy EIS reports, "The DOE study said restarting the plant's nuclear reactors will lead to 'excess cancer fatality' within a 50-mile radius of SRS and <u>downriver near the coast</u>. But no statistics or explanation was provided." This is unacceptable to the people of Beaufort. We want statistics and we want explanations. Your EIS needs to consider the level by which the Savannah River is being polluted by tritium, and a study of alternatives to this pollution — for instance, the cost and feasibility of a special treatment plant at the source, or a treatment plant at the Beaufort-Jasper Water Authority which distributes the Savannah River water. Although the intent of these hearings is that they should be a tool for making decisions, many of us wonder if this process is not a charade, if the decisions have not already been made. It is upsetting to hear Secretary Watkins say there are dangers but we have no choice but to get on with producing tritium. I could recite a long litany of risks associated with SRP — starting in 1978 when the Armed Services Committee reported "Galloping Obsolescence" at SRP, and in 1981 when DOE admitted that degradation was "serious" and that radiation exposures to personnel were reaching unacceptable limits, and in August 1989 when Westinghouse announced that half of the construction welders were improperly certified and in August 1989 when Secretary of Energy Watkins said, "The fragility of the antique reactors at SRP is going to be hanging over our heads like the sword of Damocles until the year 2005.	

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

Yet even with this history, somehow we are made to feel unAmerican when we speak out for a safe and healthy environment, when we ask questions about SRP.

As our foreign policy changes, shouldn't our tritium needs also be evaluated? Are defense needs absolute, while environmental safety is relative? When we poison our environment, the enemy is us -- and the growing threat to America's well-being could be of our own creation and within our own bodies.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-03	STATEMENT OF JAMES E. BEARD	
	My name is James E. Beard. I am the director of the Nuclear Weapons Project at Environmental Policy Institute/Friends of the Earth. The Nuclear Weapons Project has been in existence for more than a decade, and is primarily concerned with ending the production of nuclear weapons materials, and with closing and cleaning up the Department of Energy's nuclear weapons production facilities. As an active participant in several Department of Energy Environmental Impact Statement processes, I find the Draft EIS under discussion today to be particularly distressing. This Orwellian exercise clearly demonstrates that the culture in the Department of Energy has indeed changed, not for the better but for the worse. My comments deal with several areas in which the Draft EIS is fundamentally flawed. Needless to say, these flaws dictate that the EIS must be extensively rewritten if the Final EIS is to meet the requirements of the National Environmental Policy Act and serve as a useful planning document. <u>I. Fundamental Flaws</u> As mentioned above, there are a number of very serious flaws in the Draft EIS under discussion. The Draft EIS is not grounded in reality, in that DOE does not honestly address the events leading up to the current shutdown of the reactors. The EIS is not based on a fair, truthful, even-handed examination of the need for tritium and plutonium. DOE has apparently deliberately distorted the examination of options in the Draft EIS. Last, and perhaps most important, the Draft EIS is completely divorced from the actual work being done to restart the reactors. 1) The Draft EIS does not honestly address the events leading up to the current shutdown of the reactors. The foreword to the Draft EIS states: "DOE started P-Reactor [in August 1988] following resolution of the seismic concerns. After this startup, the operating contractor and DOE jointly decided that further improvements in	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	operation and management were necessary. These improvements are being made and verified.	
	DOE/EIS 0147D, p. v.	
C-03-01	This is so much hogwash. DOE did not "start" the P-Reactor in August 1988. Most assuredly, there was an attempt to start the reactor. This attempt, however, led not to a successful restart but to a situation where the reactor operators and their supervisors violated essentially every standing order, rule and guideline for operating the reactor. This put the reactor into an extremely unsafe condition, and could have led to a serious accident. When the reactor operators and their supervisors finally got around to reporting this incident to DOE and contractor management, the hue and cry raised within and without DOE did lead to calls for drastic improvement in the management and operation of the reactors, but it is not as if DOE and contractor staff at SRP came to this decision on their own. The DOE's attempt at revisionist history in the Draft EIS clearly demonstrates the extent to which DOE's hidebound culture remains unchanged, and also raises very important questions about the commitment in DOE to the safety improvements at the SRP reactors.	The statement on the P-Reactor startup in August 1988 in the Foreword has been revised to respond to the comment on "attempted startup."
C-03-02	2) The Draft EIS is not based on a fair, up-to-date examination of the need for tritium. The Draft EIS states clearly that the SRP reactors must be restarted very quickly because of the urgent need for the materials produced in these facilities, namely tritium. The EIS goes on to state that the assessments of the need for these materials are classified, and are primarily based on the current Nuclear Weapons Stockpile Memorandum (NWSM), approved by President Reagan on January 19, 1989. January 19, 1989. Think about that for a minute. Think about what has happened, how the world has changed, in the past year and a half. The Berlin Wall has come down. East and West Germany are merging their economies. Representative democracies are springing up in Czechoslovakia, Romania, Poland, all of Eastern Europe. The Warsaw Pact has effectively disappeared as an effective fighting	Please see the response to Comment C-01-01 on the need for tritium. The need for nuclear weapons is beyond the scope of this EIS.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-538	force. Free elections have been held in the Soviet Union. Closer to home, the Follow-on-to-Lance and the 155mm nuclear artillery shell have been cancelled. A Strategic Arms Reduction Talks (START) Treaty between the United States and the Soviet Union has been negotiated and signed.	
	These events, all of these changes, have a significant effect on the United States' requirements for nuclear weapons materials, including tritium. The START Treaty itself, eliminating roughly 30% of the existing U.S. strategic arsenal, may completely eliminate the need to produce any tritium at all for several years. It is patently obvious that all considerations of the need for tritium are obsolete, and that the issue must be revisited. It is also clear that the 'need' for tritium no longer provides a credible rationale for proceeding with SRP reactor restart on an urgent basis.	
	Additionally, the need for tritium must be looked at in an open, unclassified forum. The days of classified appendices to Environmental Impact Statements must come to an end. If DOE is truly serious about changing their culture and coming to grips with their problems, they can no longer hide behind the veil of secrecy.	
C-03-03	3) The Draft EIS incorporates deliberate distortions of the alternatives considered. The EIS must include a fair, un-biased examination of cold-standby options.	The CEQ has stated that there are two distinct interpretations of "no action." One involves situations in which there is an ongoing program initiated under existing legislation and regulations. In these cases, "no action" is "no change" from current management direction. "Therefore, the 'no action' alternative may be thought of in terms of continuing with the present course of action until that action is changed" ("Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations. 46 FR 18027"). Because extended outages for modifications are part of reactor operation (and recognized as such by the NRC for its licensees), the resumption of production following such an outage is also part of the continuing operation of the reactors.
	Section 2.1 (p. 2-3) of the Draft EIS defines restart of the SRP reactors as both the 'Proposed Action' alternative and the "No Action" alternative. This is non-sensical, and trivializes the entire EIS effort. Here DOE has clearly demonstrated their lack of interest in any serious consideration of alternatives. Given the age of these reactors, referred to by Secretary of Energy Watkins as dangerous "antiques," it is clear that DOE had disregarded its safety responsibilities.	
	While defining both the "Proposed Action" alternative and the "No Action" alternative as what they want to do, DOE also deliberately distorts the cold-standby options so as to make them technically unacceptable and economically disastrous for the affected communities. This again trivializes the EIS process, and amounts to nothing more than goon-squad scare tactics.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-03-04	The Draft EIS must be revised to include a thorough, unbiased examination of cold-standby options, especially in light of the recently signed START Treaty, which will greatly reduce the United States' need for tritium. A reasonable cold-standby option would include finishing the EIS process, proceeding with all of the safety modifications at all three reactors (a process which could take several years), and proceeding with the recruiting, hiring, and training necessary to have a full operations and maintenance staff available at all three reactors at all times. While DOE may not recognize that the work force at all three reactors is important to maintain, we do. After completion of all safety improvements, each reactor would be maintained in a cold-standby status, ready to be refueled and restarted on short notice. The cold-standby option would have some very important benefits: a) A readily available source of tritium, should the need arise. b) No operational wear and tear on the admittedly old SRP reactors. c) Safer reactors. It cannot be denied that the reactors will be safer after the completion of all the necessary safety modifications and improvements. The cold-standby option will ensure that all of these critically important changes are made <u>prior</u> to restart, not after.	The condition described is "cold shutdown," as defined in this EIS. Section 2.1 has been revised to clarify that such options are included in the proposed action as needed to best meet the requirements as established by the then-current NWSM.
C-03-05	d) More money for cleanup. Any reactor funds not required for actual operation of the reactors and their auxiliary facilities could perhaps be transferred to environmental restoration activities. The DOE's apparent refusal to seriously consider cold-standby options is a disservice to the public, and is an abrogation of DOE's responsibility under NEPA to examine all reasonable options.	Congress establishes funds separately for waste management and environmental restoration and for defense materials production.
C-03-06	4) The Draft EIS is completely divorced from the actual reactor restart decision-making process.	DOE is required to examine all reasonable alternatives in the EIS. DOE has examined these alternatives to the proposed action and has

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	It is made abundantly clear in the Draft EIS that DOE is not interested in using the EIS process to examine alternatives, but rather only in using the EIS, however inadequate, to justify decisions that they have already made. This charade, this sham process, ultimately leads to reactors that are less safe, being operated to produce tritium we don't need.	demonstrated their inability to meet DOE mission goals for tritium production. Further, DOE must consider all public and agency comments, as required by NEPA, in the preparation of the Final EIS and the Record of Decision.
	If the DOE and Secretary Watkins are serious about wanting to change how they do things, if they are serious about being honest, if they are serious about being safe, this EIS is the place to start.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-04	STATEMENT OF GORDON R. THOMPSON Testimony on behalf of Institute for Resource and Security Studies 27 Ellsworth Avenue, Cambridge, Massachusetts 02139, USA Phone:(617) 491-5177 Fax:(617) 491-6904 and Energy Research Foundation, Columbia, South Carolina <u>About the Testimony</u> This testimony provides interim comments on a draft environmental impact statement (EIS) prepared by the US Department of Energy (DOE). The comments are in outline form, and more substantial written comments will subsequently be submitted to DOE. <u>About the Author</u> Dr. Gordon Thompson is a technical and policy analyst active in the areas of energy, the environment, international security, and sustainable society. He is currently the Executive Director of the Institute for Resource and Security Studies, Cambridge, Massachusetts. <u>About the Institute for Resource and Security Studies (IRSS)</u> The IRSS is an independent, non-profit Massachusetts corporation. It was founded in 1984 to conduct research and public education on the efficient use of resources, protection of the environment, and the furtherance of international peace and security. The institute currently has active programs on: the risks associated with nuclear power facilities; nuclear and conventional arms control; the restraint of nuclear weapons proliferation; and sustainable development. <u>Summary of Key Points</u>	
C-04-01	The draft EIS breaks a long-standing tradition of DOE and its predecessors, in that it admits the potential for a severe accident at a Savannah River reactor, possibly leading to many deaths and injuries (both onsite and offsite).	The comment is incorrect. The Final EIS on L-Reactor Operation (DOE/EIS-0108) identified the potential for severe accidents and risks to the public.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-04-02	Nevertheless, the draft EIS's findings as to the risk of such an accident are not reliable because: (i) they are based on unpublished and incomplete studies; (ii) there are inherent difficulties in probabilistic risk assessment; and (iii) they rely on assumptions which may lead to an under estimation of accident risk.	DOE has responded to these assertions in the responses to Comments C-04-12 through C-04-14.
C-04-03	DOE proposes to restart the reactors with known safety deficiencies, the draft EIS does not provide defensible arguments for this policy, either case-by-case or generally.	Please see the response to Comment C-01-02 on reactor safety.
C-04-04	The need for tritium and other materials is addressed only in a classified appendix, which appears not to adequately account for actual and potential reductions in the US nuclear arsenal; this unnecessary secrecy further prevents the public from judging if the risk of a reactor accident should be tolerated on "national security" grounds.	Please see the response to Comment C-01-01 on Appendix A.
C-04-05	There is no recognition of the possibility of a negotiated ban on production of plutonium for nuclear weapons.	Please see the response to Comment C-01-01 on Appendix A. The need for nuclear weapons is beyond the scope of this EIS.
C-04-06	There is no analysis of the potential for systematically reducing accident risk by operating the reactors at low power and low fuel burnup.	One objective of an EIS is to bound the potential impacts of the proposed action; risks from operation at lower power levels would be smaller than those presented in the EIS. DOE has modified Section 4.1.3.1 on reactor accidents to state that these risks would be smaller than, and are bounded by, the risks of full-power operation.
C-04-07	The option of placing the reactors on cold standby is inadequately addressed in the draft EIS, although that option may be able to simultaneously: (i) eliminate the risk of a reactor accident; (ii) meet "national security" objectives; and (iii) allow an orderly transition in the number of site employees.	The condition described is "cold shutdown," as defined in the EIS. DOE has revised Section 2.1 to clarify that options such as cold standby are considered in the proposed action to best meet the need established in the NWSM.

Table of Contents

1. Scope of These Comments
2. A Historical Perspective

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	3. DOE's Probabilistic Risk Assessment (PRA) 4. Accident Risk According to the Draft EIS 5. Known Safety Deficiencies and Reactor Restart 6. The Need for Tritium and Other Materials 7. Options for Reducing Accident Risk 8. The Cold Standby Option 9. References	
C-04-08	1. <u>Scope of These Comments</u> These comments focus primarily upon the potential for adverse human health effects or environmental degradation arising from accidental releases of radioactivity from the SRS reactors. That potential is affected by the mode of operation of the reactors, which is in turn affected by the need for tritium or other materials. Thus, the public cannot give informed consent to the risk of reactor operation unless it is fully and accurately informed about: (i) the nature of the risk; (ii) alternative modes of reactor operation and their implications for risk; and (iii) the "national security" justification for materials production. These comments address the extent to which the draft EIS provides such full and accurate information, in some instances the nature of the missing information is illustrated here by selected data or findings from other studies.	These comments are addressed by subsequent responses to this statement.
	2. <u>A Historical Perspective</u> The SRS reactors were built to resist the blast effects of nuclear attack, but originally had no confinement system whatever (Thompson, 1987).	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	In the early years, emergency procedures covered air raids and <u>external</u> radioactive contamination as well as reactor accidents (St. John et al, 1958).	
	The potential for a reactor accident which could lead to many offsite deaths was recognized in the early years, but this information was not published (St. John et al, 1958).	
	Filters were added to the reactor building ventilation system in 1960-61, and other safety improvements have been added over the years (see Exhibit 1); this indicates a growing awareness (within DOE and its predecessors) of the accident potential of these reactors.	
C-04-09	DOE and its predecessors have for many years failed to fully inform the public about the reactors' accident potential; that omission is illustrated by DOE's May 1984 EIS for restart of L-reactor (DOE, 1984).	Please see the response to Comment C-04-01 on the potential for accidents.
C-04-10	The present draft EIS, although deficient in many respects, does publicly admit the potential for a severe reactor accident which leads to a substantial offsite release of radioactivity and, potentially, to many deaths and injuries.	Section 4.1.3.1.5 of the EIS presents the risks of severe reactor accidents.
C-04-11	DOE's greater openness about accident potential comes at a time when the US nuclear arsenal is being reduced unilaterally or by negotiation; yet, DOE remains obsessively secretive about the need for tritium and other materials.	Please see the response to Comment C-01-01 on the need for tritium and classification of information.
	3. <u>DOE's Probabilistic Risk Assessment (PRA)</u>	
	A PRA is being prepared for the SRS reactors and a draft Level 1 study has been submitted to DOE; completion of the Level 1 study is anticipated prior to restart, while completion of the Level 2 and Level 3 studies will occur after restart.	
C-04-12	DOE has refused to publicly release the draft Level 1 PRA, thus precluding open, critical review of its methods and assumptions. Although the PRA is incomplete and its draft is not publicly available, PRA-type risk estimates (Levels 1 through 3) are presented in the draft EIS; clearly, these estimates cannot be regarded as reliable.	The Level-1 PRA has been completed and will be released to the public when the UCNI review has been completed. The Level-1 PRA has already undergone a peer review by a group of PRA experts and will continue to undergo peer review for future revisions. Section 2.1.3.1.2 has been revised to discuss these groups.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-04-13	There are inherent difficulties in conducting a nuclear reactor PRA; as a result, PRA findings are deficient in the following respects (Hirsch et al, 1989) (i) the uncertainty of the results tends to be grossly under-estimated; (ii) there is a tendency to systematically under-estimate the influence of those risk contributors which are accounted for; and (iii) a variety of risk contributors (such as sabotage) are not accounted for.	DOE acknowledges the uncertainties inherent in PRA analyses. However, the SRS PRA encompasses the best available estimates of uncertainty and is considered conservative (i.e., it does not "systemically under-estimate the influence of those risk contributors which are accounted for."). DOE has revised Section 4.1.3.1.5 to include a discussion on uncertainty. DOE agrees that PRAs generally do not quantify risk due to sabotage, nor does the SRS PRA. Sabotage is considered in the security contractor's safeguards and security programs. (See Section 2.1.5.)
C-04-14	Findings from the PRA for the SRS reactors will be further limited in their reliability because: (i) this reactor type is unique; and (ii) there is a very limited base of operating experience in comparison to that for commercial reactors.	The SRS Reactor PRA uses commercial reactor data (including human factors experience) if they are relevant; the SRS PRA benefits from the commonality of most of the systems in the SRS reactors. Commercial nuclear plants tend not to be of "standardized design," even those with reactors built by the same vendor. Thus the 1,400 reactor-years cited are not necessarily applicable to the PRAs of all commercial nuclear plants.
C-545	4. <u>Accident Risk According to the Draft EIS</u> Risk estimates equivalent to PRA Level 3 are presented in the draft EIS; Exhibit 2 illustrates those estimates. Exhibit 2 shows a probability of about 10^{-4} per reactor-year that a reactor accident will lead to 100 or more offsite cancer fatalities; this implies that, if 3 reactors are run for 10 years, the probability of such an outcome will be 0.3%.	
C-04-15	The type of presentation used in Exhibit 2 merges probabilities of a wide variety of types and does not show the many uncertainties involved; it is, therefore, misleading.	Combining probabilities of independent events of different types is a valid methodology; the individual event probabilities for all release categories are too voluminous to include in the EIS, but they are in the Safety Information Document (WSRC, 1990), referenced in this EIS. Also, please see the response to Comment C-04-13 on uncertainty.
C-04-16	The draft EIS does not show an uncertainty range for its estimates of risk; Exhibit 4 illustrates this lack by showing the uncertainty range (itself questionable) in one estimate of core damage probability for the Peach Bottom commercial reactors.	DOE has rewritten Section 2.1.3.1.2 of the EIS to include the Level-1 PRA core-damage frequencies. DOE also has changed Section 4.1.3.1.5 to include a discussion on uncertainty.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-04-17	Accident consequence estimates presented in the draft EIS assume that people could be evacuated from within a 20-mile radius of the affected reactor, starting 2-4 hours after a release begins, with an average evacuation speed of 1-2.5 mph (see Table 4-33 of: DOE, 1990); however, there is no current planning for such an extensive evacuation (see the emergency planning discussion at pp. 3-61 to 3-65 of: DOE, 1990). There are about 48,000 people living within 20 miles of the site (see Exhibit 5) and several major communities within that distance or just beyond (see Exhibit 6).	DOE disagrees that there are no plans for an evacuation as used in the consequence assessment. Current emergency planning consists not only of plans at SRS, but also planning by the States. The assumptions used for the consequence assessment represent a reasonable, yet conservative, set of parameters. DOE has changed Section 4.1.3.1.5 to include a discussion of evacuation speed and distance assumptions.
C-04-18	The draft EIS should, but does not, show the geographic extent of potential human injury or environmental degradation resulting from a release of radioactivity; that extent is illustrated by computer-derived estimates shown in Exhibits 7 and 8 (a map of ground contamination from the Chernobyl accident is shown in Exhibit 9, for comparison).	Section 4.1.3.1.4 of the EIS presents the extent of potential human injury from radioactivity released from design-basis accidents in terms of median doses to hypothetical individuals at the SRS boundary, consistent with the approach to environmental analyses of accidents at commercial reactors. Section 4.1.3.1.5 presents the consequences for severe accidents in terms of the risk of prompt and delayed fatalities to individuals and to the population within 500 miles of the SRS.
C-04-19	Exhibits 7 and 8 were based on a hypothetical release of 50% of iodine and cesium isotopes; Exhibit 10 shows that this assumption was reasonable.	As presented in the Safety Information Document (WSRC, 1990), which is referenced in the EIS, the eight release categories referred to in Exhibit 10 have a combined probability of less than 1×10^{-5}, or less than 5 percent of the total core damage probability. The corresponding releases have been included in the accident consequences reported in the EIS, weighted in accordance with their respective probabilities of occurrence.
C-04-20	Draft EIS findings such as those shown in Exhibit 2 are based on old assumptions about the effects of low doses of radiation; use of contemporary assumptions (such as those provided in the BEIR V report) could increase estimated risk by a factor of 3 or 4 (see page 4-84 of: DOE, 1990).	As noted in the Consequence Assessment subsection of Section 4.1.3.1.5 of the EIS, the MACCS estimates of latent cancer risks were adjusted up by a factor of 2.1.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
5. Known Safety Deficiencies and Reactor Restart		
C-04-21	Secretary of Energy Watkins is reported to have said (State, 1989): "The fragility of the antique reactors at Savannah River is going to be hanging over our heads like the Sword of Damocles until the year 2005". Notwithstanding the safety improvements shown in Exhibit 1, it is widely agreed that the reactors suffer from basic design weaknesses, aging problems, and a history of poor maintenance and operating standards. Several reviews have identified and, to some extent, prioritized a wide variety of needed safety improvements; for example, a recent Westinghouse review recommended and prioritized 50 safety improvements, and provided limited qualitative arguments for each recommendation (Westinghouse, 1989b).	Please see the response to Comment C-01-02 on reactor safety. In addition, Section 2.1.3.1.2 of the EIS discusses aging, maintenance, and plant modernization, and Section 2.1.2.8.3 discusses operating practices.
C-04-22	The draft EIS describes safety improvements to be completed before restart or subsequently; it does not provide coherent supporting arguments as to why these particular improvements have been selected or why some are to be deferred until after restart (see the vague discussion of safety philosophy at pp. 2-57 to 2-58 of: DOE, 1990).	Sections 2.1.2.8.2 and 2.1.3.2.1 of the EIS discuss the Restart Issue Management Program (RIMP), which identifies issues that must be addressed before the resumption of production, including those identified in the Westinghouse Independent Safety Review; in addition, DOE has revised Section 2.1.2.7 describing the Reactor Safety Improvement Program (RSIP), which establishes priorities for items that can be addressed after the resumption of production.
C-04-23	The SRS reactors, even after planned improvements, will not meet many relevant NRC standards for commercial reactors.	DOE uses or adapts many NRC standards for commercial light-water reactors if they are relevant to heavy water reactors. A detailed comparison of these standards is not useful in an assessment of the environmental impacts of continued operation, because the impacts described in the EIS (Section 4.1) are based on the reactors as they are built and as they are operated to the DOE standards that have been applied.
C-04-24	The Defense Nuclear Facilities Safety Board has found that DOE standards relevant to health and safety issues are incomplete or otherwise inadequate (DNFSB, 1990a); many of these deficiencies will not be corrected prior to restart.	DOE will complete the criteria development for Order revision, as stated in Section 2.1.3.1.1 of the EIS.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-04-25	The Defense Nuclear Facilities Safety Board has recommended that DOE determine and specify standards for training of plant operators and supervisors (DNFSB, 1990b); DOE's response to those recommendations indicates that important training deficiencies will not be rectified prior to restart (ERF, 1990).	Section 2.1.2.8 of the EIS describes the reactor operating organization and practices, including training requirements, which the DNFSB also reviews. The <u>Federal Register</u> (55 FR 7022 and 55 FR 9487) has published the DNFSB recommendations.
C-04-26	As an illustration of DOE's incoherent policy on safety modifications, the addition of a fourth emergency cooling system line will mean that "the existing flood control capacity of the reactor building sump pumps could be marginal" (see page 2-30 of: DOE, 1990); yet, upgrading of the sump pump capability will be deferred until after restart, in contravention of a previous Westinghouse recommendation (Westinghouse, 1989b).	Please see the response to Comment C-01-02 on safety upgrades.
C-548	6. <u>The Need for Tritium and Other Materials</u>	
	C-04-27 Analysis of need appears in a classified appendix, thus precluding critical review of its assumptions and preventing the public from reaching an informed judgment about the "national security" justification for reactor restart. Production of plutonium-238 is not vital to national security, and can employ other reactors (such as FFTF). Long-term maintenance of a fixed nuclear arsenal would require tritium production sufficient to compensate for tritium decay; Exhibit 11 shows the rate of decay. The US nuclear arsenal is becoming smaller, and this trend is likely to continue; its estimated size has shrunk from 22,500 weapons in mid-1989 (see Exhibit 12) to 20,750 weapons in mid-1990, a 7.8% decrease (Norris and Arkin, 1990). The target list under the Single Integrated Operational Plan (SIOP) was reduced during the 1980s (see Exhibit 13); ongoing international developments can be expected to lead to further reductions. Use of a fraction of the warheads in the US or Soviet nuclear arsenals would cause terrible damage, as shown in Exhibits 14 and 15; incidentally, this damage could legitimately be considered to be a potential environmental impact arising from operation of the SRS reactors.	Please see the response to Comment C-01-01 on the need for tritium and other nuclear materials. The production of a plutonium-238 in SRS reactors is a continuation of previous adjunct production activity at SRS, and the EIS considers it in that perspective. DOE can no longer support the use of FFTF as a testing facility for breeder reactor components, and examined the feasibility of producing plutonium-238 as a possible alternative function. As described in Section 2.4.4 of the EIS, the examination disclosed that plutonium-238 production at FFTF would (1) cost substantially more than at SRS for reactor operation and for the construction of facilities to extract and purify the product, which already exist at SRS; (2) produce a product of lower purity than is possible at SRS; and (3) require a longer time to provide the quantities of material required. On this basis, FFTF is not considered to be a reasonable alternative for meeting the needs.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-04-28	The current US tritium inventory is apparently about 100kg, so that tritium production of about 5.6 kg per year would support a fixed arsenal; as shown in Exhibit 16, the full production capability of the three available SRS reactors substantially exceeds that amount.	
C-04-29	The draft EIS claims that operation of all three SRS reactors is necessary; this strongly suggests that the EIS's classified need analysis fails to account for actual and potential reductions in the US nuclear arsenal. The draft EIS does not recognize the possibility of a negotiated ban on production of plutonium for nuclear weapons, although such a ban would have implications which should be reflected in an EIS.	Section 1.2 of the EIS discusses the need for reactor production capability and its responsiveness to the changing world geopolitical situation. Any negotiated ban on plutonium for nuclear weapons would not affect the analysis in the EIS, because there is no current requirement for such plutonium production by SRS reactors.
C-549	7. <u>Options for Reducing Accident Risk</u>	
	C-04-30 The draft EIS contains a very limited discussion of some potential plant modifications which might reduce risk, but does not discuss risk-reducing options which affect the mode of reactor operation; this omission may be related to DOE's refusal to publicly discuss the need issue.	Please see the response to Comment C-04-06 on bounding impacts, reactor operating levels, and risks.
	C-04-31 Risk-reducing options which affect the mode of reactor operation include: (i) operation at reduced power; (ii) driving fuel to a low burnup; and (iii) reducing capacity factor.	DOE agrees.
	C-04-32 As illustrated by Exhibit 16, use of options (i) and (iii) is compatible with producing tritium sufficient to maintain a fixed US nuclear arsenal.	Appendix A of the EIS discusses the production of tritium to meet the requirements of the current NWSM.
	C-04-33 Low-power operation will, other factors being equal, somewhat reduce the probability of a severe accident by increasing safety margins; also, the quantity of iodine and other short-lived isotopes released during an accident will be roughly proportional to the power level, thus reducing onsite and offsite consequences.	DOE agrees. See Section 4.1.3.1.5 under <u>Reduced Power Operation</u> .

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-04-34	If fuel is driven to a lower burnup, the quantity of cesium and other long-lived isotopes released during an accident will be reduced, thus reducing accident consequences; there will be some increase in operating costs.	DOE agrees.
C-04-35	A reduced capacity factor would allow more opportunities for preventive maintenance, testing, and training, thus somewhat reducing the probability of a severe accident.	DOE agrees.
8. <u>The Cold Standby Option</u>		
C-04-36	The draft EIS provides a sketchy discussion of this option for one, two or three reactors (see pp. 2-65 to 2-66 of: DOE, 1990). That discussion proposes the immediate discontinuation of plant upgrades and the termination of most personnel; both at the reactors and at the associated fuel/target fabrication and reprocessing facilities.	Please see the response to Comment C-03-04 on cold standby.
C-04-37	On national security grounds, it could be considered more appropriate to complete all planned upgrades and to maintain a reduced but more than skeleton staff; this would allow a rapid resumption of operation should that prove necessary. Such a cold standby option could eliminate the risk of a reactor accident, while allowing tritium production to be resumed quickly whenever needed; in light of ongoing reductions in the US nuclear arsenal, it appears that this option could meet both the traditional "national security" objectives as well as the objective of protecting public health and safety. The drastic standby option outlined in the draft EIS would lead to the rapid loss (if all three reactors go to cold standby) of about 9,600 jobs, or about half the present SRS workforce (see page 2-65 of: DOE, 1990). The more prudent cold standby option outlined here would lead to a more gradual and smaller reduction in the number of jobs; it may be possible to smooth the employment transition even further by transferring personnel to an accelerated program to clean up the site and decommission the C- and R-reactors.	Because this state of readiness is bounded by the analysis presented in the EIS, it could be employed as appropriate in the changing world geopolitical situation.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-04-38	It may, in any case, not be wise for local communities to rely upon site employment continuing at the present level; in the Safety Analysis Report it is estimated that the SRS work force will decline to about 8,500 to 9,000 people in the mid-1990s (Westinghouse, 1989a). DOE's failure to carefully consider the cold standby option is the most important deficiency in the draft EIS; that failure constitutes a neglect of DOE's responsibilities in terms of national security, public health and safety, environmental protection, and the economic well-being of local communities.	Please see the response to Comment C-04-37.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	9. References	
	(Ball and Toth, 1990) Desmond Ball and Robert C. Toth, "Revising the SIOP: Taking War Fighting to Dangerous Extremes", International Security , Spring 1990, pp. 65-92.	
	(Church et al, 1983) John P. Church and 8 other authors, Safety Analysis of Savannah River Production Reactor Operation (Deleted Version), September 1983.	
	(Cochran et al, 1987) Thomas B. Cochran and 3 other authors, US Nuclear Warhead Production , Ballinger Publishing Company, 1987.	
	(Daugherty et al, 1986) William Daugherty and 2 other authors, "The Consequences of 'Limited' Nuclear Attack on the United States", International Security , Spring 1986, pp. 3-45.	
	(DNFSB, 1990a) Defense Nuclear Facilities Safety Board, "(Recommendation 90-2): DOE High Priority Defense Nuclear Facilities; Design, Construction, Operation and Decommissioning Standards", Federal Register , Volume 55, pp. 9487-9488.	
	(DNFSB, 1990b) Defense Nuclear Facilities Safety Board, "(Recommendation 90-1), Restart of K, L, and P Reactors at DOE Savannah River Site, Georgia", Federal Register , Volume 55, pp. 7022-7023.	
	(DOE, 1984) US Department of Energy, Final Environmental Impact Statement, L-Reactor Operation, Savannah River Plant, Aiken, SC, May 1984 (3 volumes).	
	(DOE, 1987) US Department of Energy, Health and Environmental Consequences of the Chernobyl Nuclear Power Plant Accident , DOE/ER-0332, June 1987.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	(DOE, 1990) US Department of Energy, Draft Environmental Impact Statement: Continued Operation of K-, L-, P-Reactors, Savannah River Site, Aiken, South Carolina , DOE/EIS-0147D, May 1990.	
	(ERF, 1990) Energy Research Foundation, Columbia, SC, and National Resources Defense Council, Washington, DC, comments submitted 14 May 1990 on the Secretary of Energy's Response to: DNFSB, 1990b.	
	(Hirsch et al, 1989) H. Hirsch and 3 other authors, IAEA Safety Targets and Probabilistic Risk Assessment , Greenpeace International, August 1989.	
	(Levi et al, 1987/88) Barbara G. Levi and 2 other authors, "Civilian Casualties from 'Limited' Nuclear Attacks on the Soviet Union", International Security , Winter 1987/88, pp. 168-189.	
	(NCI/AAAS, 1989) Nuclear Control Institute and American Academy of Arts and Sciences, The Tritium Factor (Proceedings of a workshop held in December 1988), published 1989.	
	(Norris and Arkin, 1989) Robert S. Norris and William M. Arkin (editors), "Nuclear Notebook", Bulletin of the Atomic Scientists , June 1989, pp 48-49.	
	(Norris and Arkin, 1990) Robert S. Norris and William M. Arkin (editors), "Nuclear Notebook", Bulletin of the Atomic Scientists , June 1990, pp. 47-48.	
	(NRC, 1989) US Nuclear Regulatory Commission, Severe Accident Risks: An Assessment for Five US Nuclear Power Plants , NUREG-1150 (Draft), 2 Volumes, June 1989.	
	(St. John et al, 1958) D.S. St. John and 3 other authors, Supplementary Reactor Safety Determination, Savannah River Plant , DPST-58-101, January 1958 (Declassified, May 1987).	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	(State, 1989) "DOE director backs restart of reactors", The State (newspaper), Columbia, South Carolina, 26 August 1989.	
	(Thompson, 1987) Gordon Thompson, Implications of Severe Reactor Accidents at the Savannah River Plant , testimony to the County Council, Richland County, South Carolina, 27 January 1987.	
	(Westinghouse, 1989a) Westinghouse Corporation, Savannah River Site Production Reactor Safety Analysis Report, L Production Reactor , 17 July 1989.	
	(Westinghouse, 1989b) W. H. Arnold et al, Westinghouse Independent Safety Review of Savannah River Production Reactors , 1 April 1989.	

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

Exhibit 1

Source: DOE, 1990

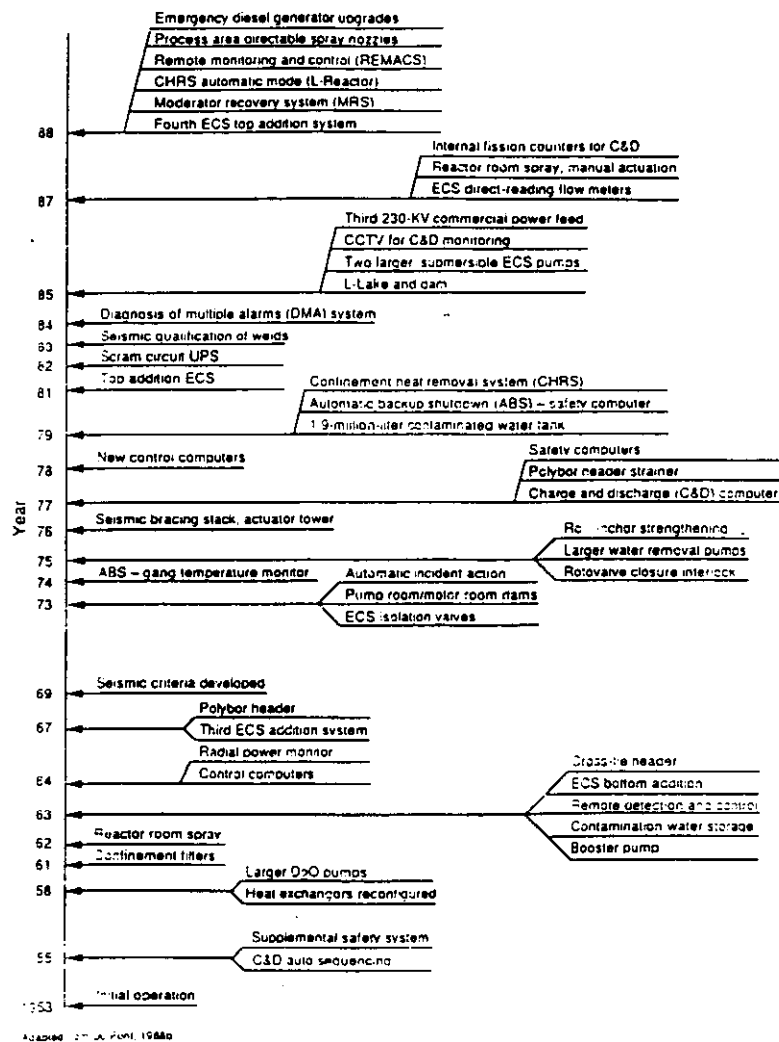


Figure 4-3. Reactor Safety Milestones.

Adapted from DOE, 1988a

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

Exhibit 2
Source: DOE, 1990

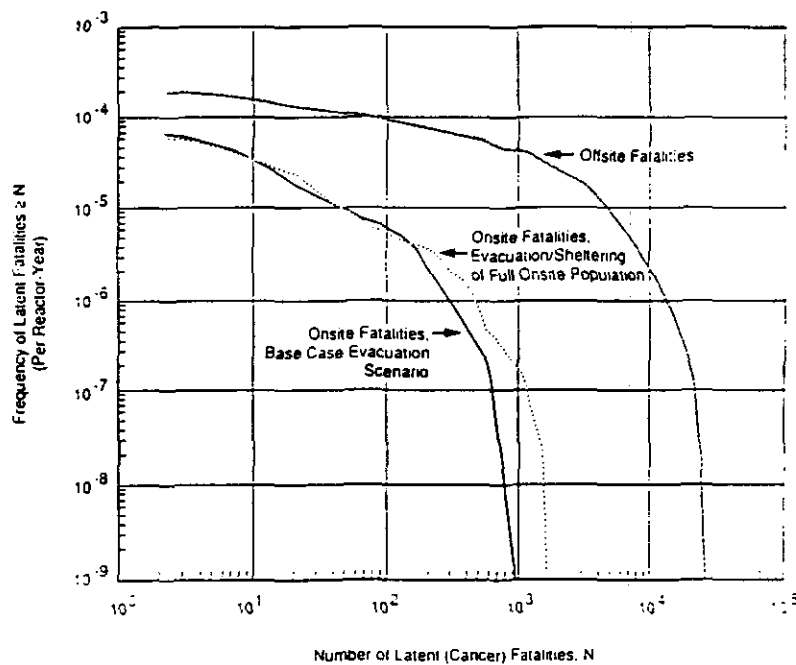


Figure 4-8. Frequency of Latent (Cancer) Fatalities Due to Severe Accidents.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
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Exhibit 3

Estimated Probability of a Severe Core Damage
Accident at a Savannah River Reactor
(per reactor-year)

	<u>Estimate^a in Draft EIS</u>	<u>Possible Estimate^b Using Livermore Earthquake Prediction</u>
Internal Events	1.2×10^{-4}	1.2×10^{-4}
Earthquakes	6.8×10^{-5}	6.8×10^{-4}
Fires	1.4×10^{-7}	1.4×10^{-7}
TOTAL	2.0×10^{-4}	8.0×10^{-4}

Notes:

- (a) Estimate from: Table 4-26 of DOE, 1990
- (b) This estimate assumes that the use of an earthquake frequency assessment prepared at the Lawrence Livermore National Laboratory would increase the estimated probability of earthquake-induced sequences by a factor of 10, a possibility mentioned at page 2-60 of: DOE, 1990.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
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Exhibit 4

Source: NRC, 1989

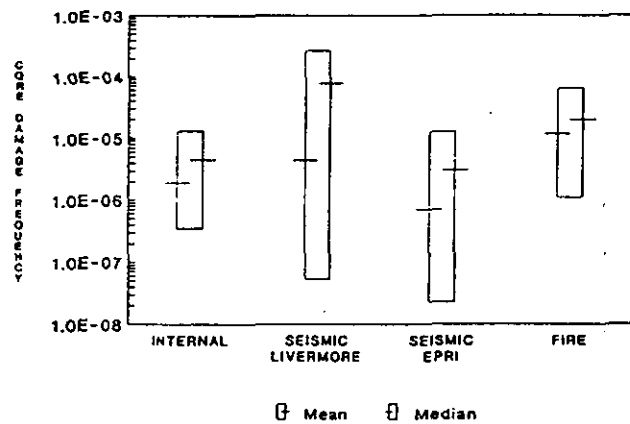


Figure 8.9 Peach Bottom external events, core damage frequency ranges (5th and 95th percentiles).

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

Exhibit 4

Source: NRC, 1989

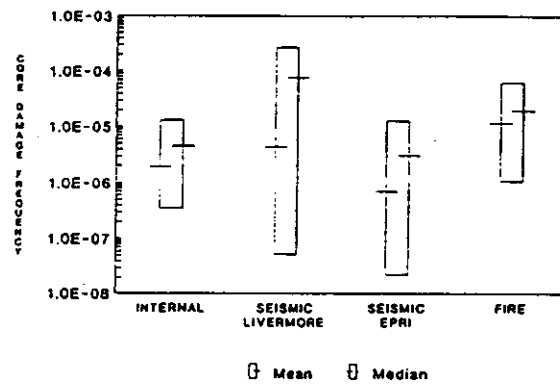


Figure 8.9 Peach Bottom external events, core damage frequency ranges (5th and 95th percentiles)

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
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Exhibit 5
Source: Westinghouse, 1989 a

SRS Production Reactor SAR

07/17/89

TABLE 2.1-9

POPULATION DISTRIBUTION WITHIN 50 MILES OF SITE
IN 1990
(BASED ON 1980 CENSUS)

Sector	Total Population	Miles from SRS Site				
		0-10	10-20	20-30	30-40	40-50
N	33,483	2	4,218	9,404	5,513	14,346
NNE	17,164	1	784	1,723	4,333	10,323
NE	24,172	0	4,970	3,174	5,451	10,577
ENE	59,253	2	1,290	6,570	5,807	45,584
E	30,154	1	8,580	7,215	8,904	5,459
ESE	9,627	38	1,894	2,212	2,692	2,791
SE	22,382	48	737	6,486	6,522	8,589
SSE	6,691	47	469	1,215	1,215	3,745
S	13,538	6	561	1,524	7,608	3,839
SSW	13,942	0	1,209	2,438	6,979	3,316
SW	8,583	0	1,055	2,104	2,316	3,108
WSW	19,789	0	986	8,281	1,682	8,840
W	20,552	68	731	8,777	2,886	8,090
WNW	169,999	318	2,502	117,626	39,191	10,362
NW	125,252	119	6,362	100,190	16,787	1,794
NNW	56,569	342	10,895	10,590	7,190	7,552
Total	631,155	992	47,243	309,529	125,076	148,315

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

Exhibit 6
Source: Westinghouse, 1989a

SRS Production Reactor SAR

07/17/89

TABLE 2.1-7

URBAN CENTERS (POPULATION GREATER THAN 2,500) WITHIN 50 MILES
OF THE SRS SITE, 1986 DATA

Population Center	County	State	Distance ^(a)	Sector	Population
Augusta ^(b)	Richmond	GA	25.0	WNW	45,440
Aiken	Aiken	SC	19.5	NNW	18,290
North Augusta	Aiken	SC	23.4	NW	16,290
Orangeburg	Orangeburg	SC	47.5	ENE	15,420
Waynesboro	Burke	GA	25.8	WSW	6,080
Barnwell	Barnwell	SC	16.4	ESE	5,960
Denmark	Bamberg	SC	28.9	E	4,460
Grovetown	Columbia	GA	34.2	WNW	4,320
Allendale	Allendale	SC	27.3	SE	4,220
Batesburg	Lexington	SC	43.3	N	4,120
Sylvania	Screven	GA	37.0	S	4,120
Bamberg	Bamberg	SC	35.2	E	3,740
Millen	Jenkins	GA	31.6	SW	3,660
Williston	Barnwell	SC	15.0	ENE	3,440
Hampton	Hampton	SC	41.3	SE	3,200
New Ellenton	Aiken	SC	9.4	NNW	3,170
Saluda	Saluda	SC	49.7	N	2,990
Blackville	Barnwell	SC	22.2	ENE	2,930
Louisville	Jefferson	GA	48.6	WSW	2,800
Edgefield	Edgefield	SC	38.8	NNW	2,740
Johnston	Edgefield	SC	38.9	NNW	2,650
Wrens	Jefferson	GA	43.8	W	2,540

(a) Approximate distance from the center of the SRS site to nearest edge of urban center.

(b) Central city of an urbanized area (Augusta, GA-SC, SMSA, which includes Columbia and Richmond counties in Georgia and Aiken County, SC; population, 327,372 in 1980).

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

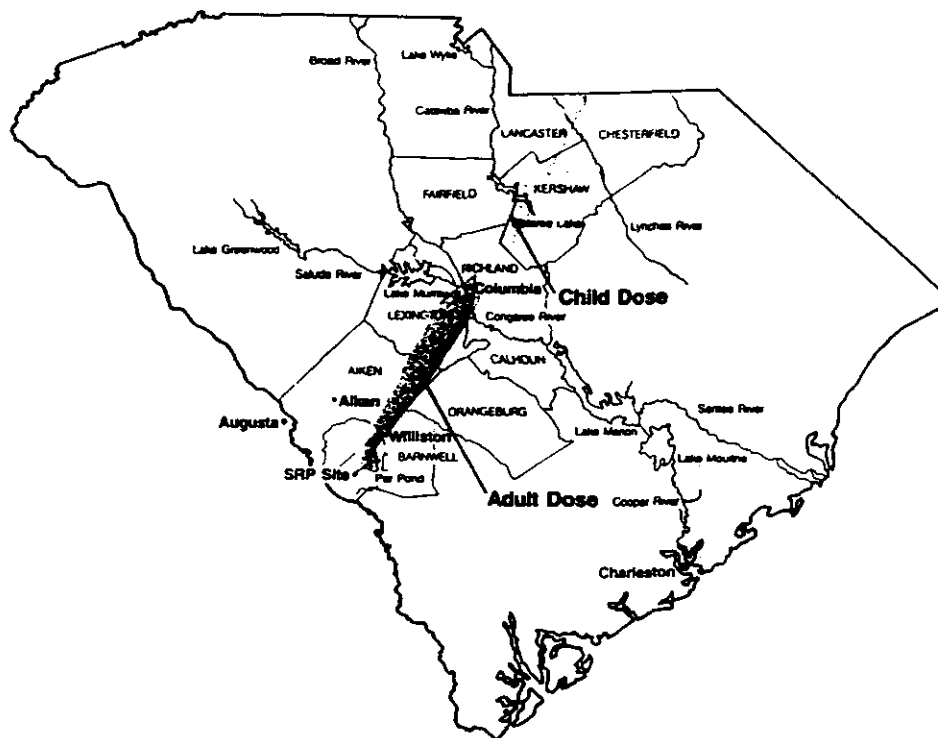
Response

Exhibit 7

Source: Thompson, 1987

**Potential Area Where Thyroid Inhalation Dose
Would Exceed 100 rem Following a
Severe Accident at an SRP Reactor**

(50% release of iodine isotopes,
class D atmospheric stability)



C-562

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

Exhibit 8

Source: Thompson, 1987

**Potential Area Where Whole Body Dose
from Land Contamination Would
Exceed 10 rem
over 30 Years Following a Severe Accident
at an SRP Reactor**

(50% release of cesium isotopes,
class D atmospheric stability)



C-563

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

Exhibit 9
Source: DOE, 1987

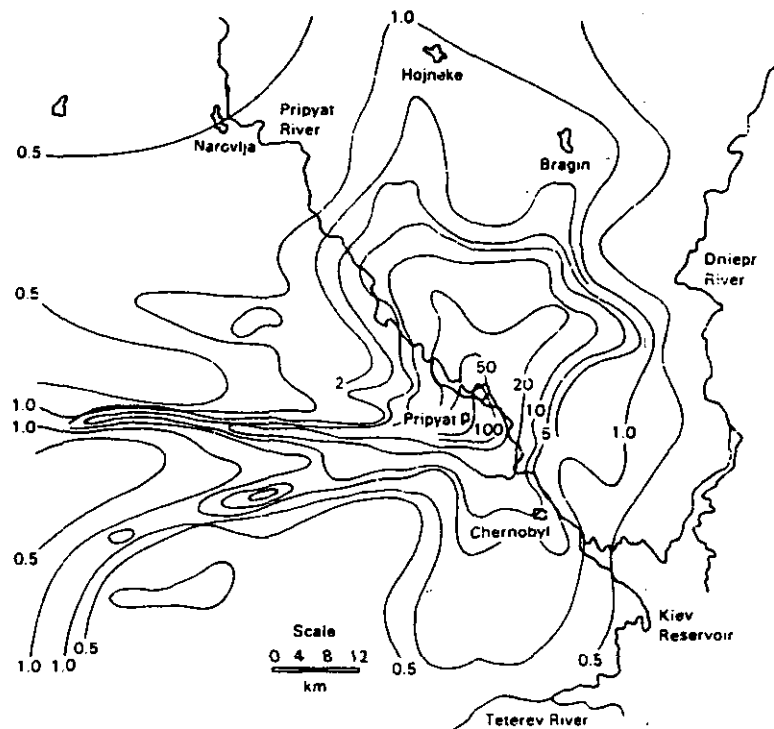


FIGURE 5.2. External Gamma-Exposure-Rate Levels (mR/hr) in the Vicinity of Chernobyl on May 29, 1986. Taken from USSR (1986).

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response																											
	Exhibit 10																												
	Estimated Iodine and Cesium Release Fractions for a Severe Accident at a Savannah River Reactor: <u>Dominant Release Categories</u> <table> <tr> <th>Release Category</th><th>Iodine Release (%)</th><th>Cesium Release (%)</th></tr> <tr> <td>2b</td><td>99</td><td>71</td></tr> <tr> <td>4b</td><td>66</td><td>43</td></tr> <tr> <td>5</td><td>94</td><td>66</td></tr> <tr> <td>5a</td><td>94</td><td>66</td></tr> <tr> <td>10</td><td>74</td><td>45</td></tr> <tr> <td>10a</td><td>74</td><td>45</td></tr> <tr> <td>11</td><td>64</td><td>36</td></tr> <tr> <td>11a</td><td>64</td><td>36</td></tr> </table>	Release Category	Iodine Release (%)	Cesium Release (%)	2b	99	71	4b	66	43	5	94	66	5a	94	66	10	74	45	10a	74	45	11	64	36	11a	64	36	
Release Category	Iodine Release (%)	Cesium Release (%)																											
2b	99	71																											
4b	66	43																											
5	94	66																											
5a	94	66																											
10	74	45																											
10a	74	45																											
11	64	36																											
11a	64	36																											

Notes:

- (a) Estimates are from: Table 4-32 of DOE, 1990.
- (b) That source shows 26 release categories, representing 26 types of hypothetical accident.
- (c) The 8 release categories shown here (the "dominant release categories") are those in which more than 1% of iodine and of cesium isotopes is released.
- (d) Releases are the % of the core inventory of radioisotopes which is estimated to be released to the environment.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
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Exhibit 11

Tritium Decay

- * Half-life: 12.3 years
- * Fraction decayed annually: 5.6 percent
- * Fraction remaining after given decay period:

<u>Decay Period</u> (years)	<u>Fraction Remaining</u>
0	1.0
10	0.57
20	0.32
30	0.18
40	0.10
50	0.06

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

Exhibit 12

Estimated US Nuclear Weapons
Stockpile, June 1989^aInventory:

<u>Weapon Type</u>	<u>Number of Weapons</u>
Bombs:	6,800
Air-defense missiles	400
Artillery and demolitions:	2,100
Antisubmarine weapons:	1,700
Intermediate and short range missiles:	1,500
Submarine-launched ballistic missiles:	5,500
Intercontinental ballistic missiles:	2,500
Cruise missiles:	<u>2,200</u>
TOTAL:	22,500^b

Distribution:(i) By Function:

* Strategic forces:	59 percent
* Tactical forces:	41 percent

(ii) By Service

* Air Force:	44 percent
* Navy/Marines:	41 percent
* Army:	15 percent

Notes:

(a) Estimates are from Norris and Arkin, 1989

(b) Differs from sum of column due to rounding

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

Exhibit 13

Source: Ball and Toth, 1990

Table 1. The Evolution of the SIOP, 1960-89.

SIOP-62	Approved by the Secretary of Defense in December 1960, and took effect January 15, 1961.	"Optimum mix" of counterforce and urban-industrial targets. No reserves, options, or withholds.
SIOP-63	Took effect August 1, 1962.	The "No-Cities" version of counterforce strategy. Four major attack options (MAOs), plus sub-options and withholds.
SIOP-5	Took effect January 1, 1976. Initial guidance provided by NSCM-242 (January 17, 1974) and NUWEP-1 (April 4, 1974).	Concept of "escalation control." 25,000 targets in the National Strategic Target Data Base (NSTDB) at the outset of SIOP-5. SIOP divided into Major Attack Options (MAOs), Selective Attack Options (SAOs), Limited Nuclear Options (LNOs), and Regional Nuclear Options (RNOs); and four target categories: Soviet nuclear forces; other military targets (OMT); Soviet leadership; and economic-industrial (E/I) targets. The latter category divided into economic recovery targets and war-supporting industry. Strategic Reserve Force.
	Nuclear Targeting Policy Review (NTPR), 1977-79.	
	PD-59, July 25, 1980, and NUWEP-80, October 1980, given effect in SIOP-5F, October 1, 1981.	50,000 targets in the NSTDB (including 25,000 OMT; 15,000 E/I; more than 5000 leadership; and 2500 strategic nuclear targets).
SIOP-6	Initial guidance provided by NSDD-13, October 1981, and NUWEP-82, July 1982. Took effect October 1, 1983.	Concept of "protracted nuclear war." Increasing emphasis on targeting Soviet leadership and relocatable targets through successive revision of SIOP-6. Elimination of the counter-recovery mission. Drastic culling of the NSTDB to 14,000 targets in 1987.
SIOP-6F	Initial guidance provided by NUWEP-87, October 1987. Guidance confirmed in NSM-12, June 1989. Took effect October 1, 1989.	Emphasis on destruction of the Soviet leadership (including prompt counter-leadership options) and relocatable targets (RTs). Development of "adaptive target planning."

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

Exhibit 14

Source: Levi et al, 1987/88

FIGURE 3. Fallout Pattern
October Counterforce Attack on Soviet Strategic Nuclear Targets



Notes:

- (a) The assumed attack involves the use of 4100 warheads on 1700 targets.
- (b) These authors estimate that 15-32 million deaths would result from this attack, with 7-25 million additional injuries.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
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Exhibit 16

Potential Tritium Production
by Existing Savannah River Reactors

Assumptions:

- 1/80 g tritium produced per MW-day of thermal energy generated.
(NCI/AAAS, 1989)
- Number of reactors available: 3
- Reactors dedicated to tritium production.
- Full power level per reactor: 2400 MW (thermal)
(Church et al, 1983)
- Typical capacity factor when in full production: 80 percent
(Cochran et al, 1987)

Potential Production:

- (i) Full Production Capability
(Full power level, 80 percent capacity factor)

Tritium production: 26.3 kg/yr.

- (ii) Reduced Capability
(1/3 of full power level, 50 percent capacity factor)

Tritium Production: 5.5 kg/yr

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-05	STATEMENT OF MARGE WEST League of Women Voters of South Carolina 2838 Devine Street Columbia, S.C. 29205 Telephone: 771-0063 LWVSC Statement re Draft Environmental Impact Statement for the Proposed Restart of the K, L, and P Reactors at Savannah River Site ...Public Hearing, June 5, 1990, Columbia, S.C. I am Marge West, president of the League of Women Voters of South Carolina. We are a non-partisan organization of volunteers dedicated to promoting the informed participation of citizens in their government. We have 12 local Leagues scattered across South Carolina - and we are all part of the League of Women Voters of the United States. We appreciate the opportunity to participate in this hearing on the Draft Environmental Impact Statement. The League of Women Voters is opposing restart of these reactors because of the age of the reactors and the still unresolved waste and environmental problems at the Savannah River Site. We are concerned about health and safety factors. We question the need to start up these reactors - and that alternatives have been fully explored. All three of these reactors are among the oldest in the nation, civilian or military, and should be candidates for decommissioning instead of restarting. All three have been shut down since 1988 because of serious safety problems. Perhaps the fact that you plan to restart them means that they have been so extensively renovated that they should be considered as new facilities - and the EIS prepared on that basis. Questions that should be answered include whether or not it is safe to operate each of them at full power - and to operate all three at the same time at full power?	Please see the response to Comment C-01-02 on safety.
C-05-01		

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-05-02	Is it the intent to restart the three because one alone cannot supply the anticipated need? - or because you need three for back up if safety problems arise? What are the safety factors involved in operating at full power versus various levels of lesser power? This EIS still does not answer that most basic of questions: what is the real need for tritium today? Appendix A is classified so that there can be no public scrutiny. It in turn is based on the Nuclear Weapons Stockpile Memorandum, an even more secret document signed by President Reagan in 1989. Yet there has been a major change in world politics since then with the events in Europe and progress in arms control. Surely, there is some way to provide information in this area if need is justified. As the proposal for the restart of these reactors proceeds, South Carolinians continue to be concerned about serious problems that already exist. The Savannah River Plant was sited before the National Environmental Act went into effect. Until recent years, the Savannah River Plant as a federal defense operation was exempt from obeying state and federal environmental laws. That meant it was free from oversight by state and federal regulators.	DOE proposes to operate all three reactors (K, L, and P) at full power or at a power level consistent with the intent to meet mission goals for the production of nuclear materials. Section 4.1 of the EIS discusses the operation of the reactors at less than full power. It is DOE policy to comply with all applicable requirements. Also, please see the response to Comment C-01-01 on the need for tritium.
C-05-03	As a result, groundwater contamination is only in the process of being cleaned up. Wetlands have been destroyed. Hazardous waste sites are many and in need of cleanup. Yet it is proposed to restart these reactors before major progress has been made - and indeed to continue the impacts. A further concern is that those charged with production are also those charged with environmental remediation. Will production goals once again demand that environmental and safety concerns be slighted? Because of the record of safety and environmental violations, there has been a public and congressional demand for independent oversight such as is provided by the Nuclear Regulatory Commission	DOE has committed to a program of waste management and environmental restoration at its sites, including SRS; this program, which is under way, is funded independently of the decision on continued reactor operation. DOE has described waste management activities at SRS in detail in other EISs (Waste Management Activities for Groundwater Protection DOE-EIS/0120 and Defense Waste Process Facility DOE-EIS-0082) and in its Environmental Restoration and Waste Management Plan (DOE/S-0070). The proposed DOE programmatic EIS on waste management and environmental restoration will provide complex-wide assessments of available options. DOE will manage SRS wastes from continued operation in accordance with the requirements of EPA, SCDHEC, and DOE Orders, as described in Section 2.1 and Chapter 5 of this EIS.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-05-04	for commercial reactors. This demand has not been met. The Defense Nuclear Weapons Facilities Safety Board is part of DOE.	Congress created the Defense Nuclear Facilities Safety Board through Public Law 100-456. It is not part of DOE; however, as part of its functions, it maintains an independent high-level safety oversight of SRS facilities.
C-05-05	These reactors will add to the stock of high level liquid radioactive waste that is stored at SRS awaiting the completion of the Defense Waste Reprocessing Facility. While this project is well underway, it has yet to solidify any of this waste and has a large stockpile awaiting reprocessing. Once again we will be producing waste without a way to deal with it - and before a final destination for that waste is a reality even after it is solidified.	Existing high-level waste tank capacity is adequate for interim storage of the high-level wastes to be produced when production resumes, pending their immobilization in glass in the DWPF, which essentially eliminates any risk of their environmental transport. DOE has a 5-year interim storage capacity for the vitrified high-level waste coming from the DWPF when it becomes operational in late 1994. DOE is also considering the expansion of the interim storage facility for the vitrified waste containers, because a national geological repository for high-level waste is not likely to be available by 1997 or 1998.
C-05-06	While provisions for emergencies are discussed in this draft EIS - evacuation plans for a much wider area are not. South Carolina learned many lessons from Hurricane Hugo - some of the most important being the need for comprehensive planning, good coordination of all responsible public and volunteer entities from the most local level through the Governor's office and up through federal levels including the army. There needs to be a well identified chain of command with sufficient and clearly identified authority to enforce decisions. After Chernobyl, no one should believe that a major accident would be limited to the 300 square miles of the Savannah River Site or the immediate Aiken area.	DOE has revised Section 3.9 of the EIS to answer concerns about emergency planning.
C-05-07	Major health studies of SRS workers and the surrounding area population are still lacking. Some progress was made last summer when a special panel appointed by DOE recommended that studies need to be conducted by an entity separated by DOE. These studies could help build public confidence - but it is proposed to restart the reactors before such studies are even underway.	Please see the response to Comment C-02-04 on health effects.
	A key argument in South Carolina for SRS activities comes down to basic economics: the number of jobs to be gained or lost. This	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	is a serious consideration for our poor state - and an issue that must be faced sooner or later if there is to be world peace. What is clearly needed now is new vision. Wouldn't it make sense if ways were being explored to promote a conversion to peace-time industry for the Aiken area economy? An orderly, non-traumatic transition should be possible because of the thousands of people needed for environmental restoration and to proceed with solidifying the waste already on site.	
	We thank you for the opportunity to offer these remarks.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-06	STATEMENT OF MARJORIE TRIFON World Summit for Children Candlelight Vigils 236 Massachusetts Avenue NE Suite 300 Washington, DC 20002 <u>A GLOBAL CALL TO ACTION</u> It is estimated that 40,000 children die each day throughout the world from malnutrition and disease with 40,000 child deaths each year in the U.S. The vast majority of these deaths are preventable. On February 8, U.N. Secretary General Javier Perez de Cuellar announced a World Summit for Children to be held September 29-30, 1990, in New York City. The summit is intended to enhance political commitment for the benefit of children both nationally and internationally. To help focus attention on the summit, candlelight vigils are being organized, beginning in Australia and sweeping around the globe, with a public education and mobilization campaign in June, July, August and September. The vigils have only just begun to be promoted internationally. As of May 15 vigils are planned for Australia, Bangladesh, Brazil, Great Britain, India, Kenya, the Philippines, and Peru. Ninety-five are scheduled in the United States as well. The vigils will begin late Sunday afternoon, September 23, with games and entertainment, and culminate with speeches, singing and the vigil at nightfall. Discussions are underway to have a child and parent from each participating country fly to New York City to present thousands of postcards or petitions to their head of state or government. The objective of the candlelight vigils is to mobilize the world's children and adults so that our leaders participate fully in the World Summit for Children and make the following commitments: 1) having children's well-being be a priority on the country's political, economic and social agenda; 2) working for ratification and implementation of the Convention on the Rights of the Child; and 3) saving the lives of 50 million children worldwide this decade, and ensuring their future health, education and opportunity to live a life free of poverty within a sustainable environment.	Comment noted.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
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	Country-specific addendums will be encouraged. In the U.S., we will be urging President Bush and other officials to commit to making our nation a world leader in children's well-being, so that U.S. child poverty, infant mortality, and school achievement are no longer among the worst of all industrialized countries.	
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Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

U.S. Endorsing Organizations (as of 5/18)

Accion International
 African Wildlife Foundation
 Aid to Southeast Asia
 Alternatives, Inc.
 American Academy of Pediatrics
 American Association of School Administrators
 American Association of Colleges for Teacher Education
 American Council on Consumer Interests
 American Federation of Teachers
 American Women's Clergy Association
 Amigos de las Americas
 Bread for the World
 Children International
 Children's Foundation
 Christian Outreach Appeal
 Church of the Brethren
 Community for Creative Non-Violence
 Community Nutrition Institute
 Ezra Taft Benson Institute
 Food Research and Action Center
 Foundation for International Community Assistance (FINCA)
 Freedom From Hunger Foundation
 Global Education Associates
 Global Kids of the Foreign Policy Association
 Institute for Agriculture and Trade Policy
 Interchurch Medical Assistance, Inc.
 Interfaith Hunger Appeal
 International Child Health Foundation
 International Medical Corps
 International Rescue Committee, Inc.
 International Service Association for Health, Inc.
 Mercy Corps International
 National Council of Catholic Women
 National Education Association
 Overseas Development Council
 Pathfinder Fund
 Planetary Evolution Committee
 Population Communication
 Tolstoy Foundation, Inc.
 TRANET
 Trees for Life

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	Trickle Up Program U.S. Committee for Refugees United Nations Association - USA Winrock International	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-07	STATEMENT OF MARY ALLSTROM MS. ALLSTROM: My name is Mary Allstrom and I am speaking on behalf of my daughter and other children in South Carolina. I moved to South Carolina last year and prior to that was in New York state and prior to that Australia. When I was in Australia, I remembered thinking and hearing and knowing about Savannah River plant and knowing how dangerous it was and I realized then how children were in danger in this state. I thought I was very lucky not living here, but my daughter is now an American citizen and this is her future. So, that's why I'm up here today. I'm very nervous. My main reason for speaking is because I think this is the future not only my daughter, but for everyone. The tritium that is being made there is no longer necessary. I didn't believe in it before, but now when Europe is changing and Russia is no longer the enemy, I think we really need to stop what is happening here in this state. That's all I want to say.	
C-07-01		Please see the response to Comment C-01-01 on the need for tritium.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-08	STATEMENT OF NATALIE HEVENER KAUFMAN	
	TESTIMONY ON SAVANNAH RIVER PLANT NUCLEAR REACTOR 6/5/90	
	My name is Natalie Hevener Kaufman and I have a Ph.D. in Foreign Affairs. I am an Associate Professor of Government and International Studies at the University of South Carolina. I am also the mother of two daughters.	
C-08-01	I mention my daughters because I find it impossible to offer them economic, moral or ethical reasons why at this time our government is considering further development of the nuclear weapons industry. In some fundamental way, our children keep us honest and creative by challenging the notion that the way we have always done things is the only way to continue doing them. The situation at S.R.P. seems to me to reflect, at best, a fundamental lack of imagination. Have we completely lost the ability to imagine a peaceful world and ourselves as a nation no longer preparing for global annihilation? Have we lost the ability to conceptualize a means of retraining and employing workers for constructive rather than destructive technology? Have we lost the sense of humanity and our awe about the natural gifts we hold only temporarily as our most important legacy to our children? We have the possibility at this moment to reaffirm our belief in life and peace. I suggest to you that the time to do so is now and the place to start is SRP.	The need for nuclear weapons is beyond the scope of this EIS.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-09	STATEMENT OF SARAH FOX 207 Wateree Avenue Columbia, South Carolina	
	My name is Sarah Fox. I live at 207 Wateree Avenue, Columbia South Carolina.	
	I am here today to speak against the proposed restart of the Savannah River Site nuclear reactors.	
C-09-01	That this rushed restart is being undertaken as crucial for our national security is truly obscene. From my years working as a volunteer in Columbia's inner-city school district, I assure you that a true national security crisis exists in the unsuccessful attempts to educate today's children.	Comments noted.
	The vast sums of money that you propose to dump down the polluted rat hole of the Savannah River Site should instead go to education — if anyone is serious about preserving the long range safety of our way of life.	
	Thank you for this opportunity to be heard.	
	Sarah Fox June 5, 1990	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-10	STATEMENT OF FRED MULLER	
	MR. MULLER: I'm Fred Muller. I'm just an individual American citizen. I do not belong to anything other than the Lutheran church. I represent no organization whatsoever.	
	I have distributed here a letter which I wrote to President Bush on February 20th and a statement in <u>The Wall Street Journal</u> that the Department of Energy is considering buying enriched uranium from Russia because they have developed a method of making enriched uranium far cheaper than we can do it. We buy yellow cake from South Africa, we are going to buy enriched uranium from Russia.	
	In this letter to President Bush, I recommended that he shut down the entire nuclear industry, not just Savannah River, everything. After Chernobyl in Russia, Gorbachov shot down the construction of 12 nuclear plants. He stopped on the drawing board 32 other nuclear plants being considered. In England, they have stopped the construction of any more nuclear power plants. This is principally because they have not figured out what to do with the waste and how to shut down the nuclear plants that they have already built. They have built a monster and put it in place and cannot figure how to kill it.	
	I have traveled the United States of America out of Denver, Colorado selling ALDRIN and DIELDRIN, which are the two most powerful insecticides ever invented. They were manufactured at Rocky Mountain arsenal. The government now has a multi-billion dollar law suit against Shell Chemical to clean up the hazardous waste that they dump at that site. I quit selling that chemical after five months because I realized what I was doing to my country. I was polluting the soil.	
	We, as American citizens, have exported all our wars since the Civil War. The American population does not know anything about death and destruction of a war. The South has not recovered from the Civil War yet. We have not caught the rest of the nation. If it was not for Mississippi, South Carolina would be number 50 in the nation.	
	I think that American citizens have not realized to even think of what they are doing. The Savannah River site, as I stated in my	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-10-01	letter to President Bush, sits 600 feet on top of the Tuscaloosa Aquifer. Water circulates in the earth just like blood in your body. You cut your finger, you bleed. If you cut your head, you bleed. If you cut your toe, you bleed. The same way you can punch a well and get water. The Savannah River project has already contaminated water to the 200 foot level. When it reaches 600 feet deep and taps or pollutes the Tuscaloosa Aquifer, the City of Augusta, Macon, Georgia, Mobile, Alabama, south Georgia and southern South Carolina or southwestern South Carolina and Mobile will all become a charred wasteland. Nothing will live there. In Poland, they could not eat the cabbage after Chernobyl. In Lapland thousands of miles north, the Laps could not eat reindeer meat because the reindeer ate the grass that was contaminated by radiation. Hundreds died at Chernobyl. Twelve and one half million acres of the finest farmland in Russia has been abandoned. One and a half million acres of timberland in that same area has been abandoned because you cannot live in a radioactive lumber house. You can't do it. They have not seen anything yet. As I stated in my letter, I had a friend who was at Eniwetok, his hip bones melted before he was 40. He died in a alcoholic, drunken hell before he was 45, racked with pain and alcoholism. Russia has not seen anything yet, just wait until the hip bones start melting. They better get a lot of surgical practice because they are going to have them. We are walking on dangerous ground. There is an abandoned nuclear power plant in Mississippi on the head water of the Mississippi River that has been guarded 24 hours a day for decades. It's abandoned. But even that far up, they have not figured what in the hell to do with that abandoned plant. They cannot leave it unguarded. What, in my opinion, are the thousands of jobs in the nuclear industry, if you are dead? Let me say this as to nuclear weapons. There never was and never is going to be, even before the collapse of communism, a war with Russia. It was 25 years after World War II before Russia could put an army in the field because all their babies starved to death because their mothers had no milk because	The Tuscaloosa aquifer, which is now called the Black Creek-Middendorf Formation in South Carolina, discharges to the Savannah River in the vicinity of SRS, as described in Section 3.4.2 of the EIS. This aquifer is not believed to be hydraulically continuous with the formation of that name in Georgia or other states. The aquifer, which lies 400 to 900 feet below the surface at SRS, is generally protected by several impermeable clay or other lithologic formations. SRS has installed monitoring wells in the aquifer to detect any type of contamination that occurs. During the approximately 35-year SRS period of operation, no radioactive contamination has been detected in the Black Creek-Middendorf aquifer as a result of reactor operation, and none is expected from continuing the operation.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	they were starving to death. It took that long to raise a child born after World War II in Russia to 25 years to make a soldier out of him.	
	There is not going to be any World War III. That is garbage. Always was since the atomic bomb. The atomic bomb is the greatest peace weapon ever made because the leaders die first. Most all wars in history have been started by old men who sent young men off to die.	
	Witness Iran and Iraq. Khoumeni and Hussain. Old men. They sent them off to fight on barbed wire, so other men could run over them to fight and kill one another. Not anymore.	
	I do not know what will happen in Moscow, for I have never been there, but I can tell you what will happen in Washington, D.C. if World War III starts. First to go will be the White House, second, the Pentagon, third, the CIA and fourth, Washington, D.C. will be turned into a solid sea of glass by the Russian atomic missiles.	
	Thank you.	
	[Mr. Muller submitted the following letter to President Bush at the Columbia public meeting. DOE has not responded to this.]	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	[A Letter]	
	President George Bush 1600 Pennsylvania Avenue The White House Washington, D.C. Dear Mr. President, Mikhail Gorbachev is not only a powerful man, but he is also very smart and decisive. On April 26, 1986 Chernobyl exploded and melted down. After he and other Russian leaders surveyed the death and destruction, Gorbachev stopped in mid-air, the construction of five Nuclear Power plants, plus he stopped the production of Plutonium and U-235 from which military weapons are made. He withdrew four older Nuclear Submarines from the Baltic Seas and evacuated 235,000 Russians from an 18 mile radius of the Chernobyl Complex. He is now considering removing 110,000 people from a 10 miles more radius. Before and after Chernobyl, the Russian Government has lied to her people and the world. Actions speak louder than words. Great civilizations have existed before in history. They all vanished when they polluted or lost their water supply. You can breathe radio-active air and live, but drinking radio-active water is guaranteed death. Water circulates and percolates in the earth just like blood in the human body. The American Government has lied and is still lying to the American people about the dangers of Nuclear power. The Department of Energy is worse than worthless. It has not made one concrete decision nor permanently disposed of one ounce of radio-active waste material. Within 125 miles of my home are 5 Nuclear Power plants and the Savannah River Bomb Plant at Aiken, S.C. where sits 35,000,000 gallons of highly toxic radio-active waste in concrete vats on top of the giant Tuscaloosa aquifer that runs at only 600 foot depth and waters the Southeast. Should God send an earthquake and dump this waste into this Aquifer, then South Georgia, South Alabama, West Florida and Mobile would become a giant waste-land just like Chernobyl.	

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

The Nuclear plant at Rocky Flats, Colorado, sits on top of the giant Goude Aquifer that waters Colorado and West Texas. Should a disaster strike there, then Denver, Amarillo, Lubbock, Midland Odessa would become the five largest ghost towns in the history of the world. The Permian basin would vanish with our oil supply. Acid rain has not killed anyone, yet, but nuclear melt-downs and radiation have killed thousands and will warp and kill millions before man wakes up.

The Russians have seen nothing yet. Just wait until cancer and melting hip bones really begin occurring, especially among their little children. Americans can sit fat, dumb and happy until catastrophe strikes. Then we will wake up with a roar! I had a friend who was at Eniwetok in a bunker behind ten feet of solid concrete. His hip bones melted before he was forty. The Veterans Administration installed plastic hip bones. He never saw forty-five. He lived and died in a Hell of alcohol and pain.

You do not have to bomb a Nuclear Power Plant to have a melt-down. All you have to do is kill the technicians who run it. A meltdown is then automatic. We have 110 Nuclear Power Plants plus 17 military operations. They all sit on top of giant Aquifers or near a large water supply for cooling purposes. It is only a matter of time until America experiences her own Chernobyl. France, with her proliferation of Nuclear Power Plants could easily have a series of domino-effect meltdowns and probably take Belgium and Holland with her as she goes into oblivion.

It is these very Nuclear Power Plants that have eliminated the possibility of any large-scale war in Europe or almost anywhere. In fact, you might consider the course Russia has taken and shut down the entire American Nuclear operation; both power plants and the military. Russia never was coming to America. For What? To contract AID'S and take it back to Russia by the millions? I do not think so. Are we going to send 10 million fine young men to defend NATO and leave addicts, criminals and drug pushers to run our country? I do not think so!

I was a B-25 and A-26 pilot in World War II doing low level work and skip bombing in India and Burma. Immediately at the end of the war, my government sent me to China to be a co-pilot on C-46 and C-47 Transport planes. We flew night and day hauling the

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	Nationalist Army to take over from Japanese before the Communist could walk there. When I arrived in Kunming, China printed money. Two months later when I arrived in Wuhan, China printed paper. In December, when I arrived in Shanghai, China printed trash! When the money collapsed, China collapsed! I saw China fall! The Communists did not <u>conquer</u> China. They just walked in and took over.	
	Communism is not all bad, if it replaces despotism as it did in China. Chiang-Kai Shek and his crowd had raped and robbed China until she was gone. I do not know what happened in the Russian Revolution as I had not been born. (1917)	
	President Reagan used the threat of Communism to run a tremendous deficit and creat the illusion of prosperity. He left you a terrible debt structure and legacy. Good luck!	
	Mr. President, there are two irrevocable laws on this earth: You cannot drink yourself sober and you cannot borrow your way to solvency. The longer either continues, the more terrible the hangover. We came out of World War II almost without a scar, except for the dead and wounded. We were <u>the</u> nation on earth. Even Germany, Italy and Japan have passed us on their road up, as we ride the road down to <u>Sixth</u> place in average income. At the end of World War II, America was the richest nation on earth and the largest creditor. Today, we are the largest <u>DEBTOR</u> and owe more money than all nations on earth. Only a fool thinks we are going to pay off our national debt. No drunk has ever sobered up as long as alcohol was free. Neither has any economic drunk sobered up as long as fools let him sign I.O.U.'s. We are the same.	
	Junk bonds and white collar crooks make the Wall Street Journal read like the Police Gazette. What a laugh! Tomorrow, our own government bonds will be on the same page. JUNK BONDS—LIKE CHINA—PAPER TRASH!	
	The world has entered an era of economic warfare from which there is no military relief. All major economic powers are exporting against other major economic powers. Russia must come with a gold backed Ruble if she is to enter world commerce and trade.	
	Mr. President, I write you this letter because Mr. Gorbachev did not make his decisions for the love of the world, he made his	

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

decision for the love of his country, Russia. I write this letter not because I love the world, but also, because I love my country, AMERICA!

You know that my views are the views of millions of concerned Americans, and you know that dramatic action is needed NOW if the United States of America is going to halt its headlong plunge into the mediocrity of debtor nations and the danger of the headlong rush into nuclear stockpiling.

Gorbachev is making a dramatic effort to solve some of the problems of the USSR. You can do no less for the USA. There is no more time to play politics. There is no more time to play out a Presidential term and leave it in the hands of the next fellow. There is NO MORE TIME!

Respectfully yours,

Fred Muller

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

U.S. Agency Reportedly May Purchase Soviet Uranium-Enrichment Services

By JOHN J. FIALKA

Staff Reporter of THE WALL STREET JOURNAL

WASHINGTON — The Energy Department reportedly is considering buying uranium-enrichment services from the Soviet Union as part of an arrangement designed to stop the Soviets from undercutting the U.S. in the lucrative business.

A spokesman for the department refused to confirm or deny reports circulating on Capitol Hill and within the nuclear industry about a pending deal. The spokesman would say only that the department is considering a "range of alternatives" to make it more competitive in the uranium-enrichment business.

The U.S. currently is the world's largest supplier of uranium-enrichment services, deriving \$1.5 billion annually from selling the services to nuclear utilities in the U.S. and abroad, according to the Energy Department. But two years ago, V.O. Technobexport, the Soviet agency that markets uranium-enrichment services, began cutting into the U.S. market, selling its services at less than half those charged by the department.

Under one version of a U.S.-Soviet deal being discussed, the department would buy cheaper Soviet fuel-enrichment services and resell them to its customers. The Soviets, in turn, would refrain from underpricing the department in the U.S.

Such an arrangement would give the Soviets hard currency and official entree into the U.S. market, in turn making political attempts here to ban their cheaper services more difficult. At the same time, the ability to resell the cheaper Soviet services would give the Energy Department a way to keep some of its long-term customers, while retaining control over the portion of the U.S. market going to the Soviets.

During the past several months, three of the Energy Department's biggest customers, including the Tennessee Valley Authority, have announced that they are terminating some of their long-term contracts.

The TVA announced earlier this year that it is inviting providers other than the Energy Department to bid on supplying fuel for its nuclear power plants. Bob Calabro, manager of nuclear fuel for TVA, said that the huge, federally owned power complex also is considering buying some cheaper enrichment services on the spot market. "The Soviets are the market maker today," he noted.

The first glimmer of a possible U.S.-Soviet deal came from New York Nuclear Corp., a tiny nuclear brokerage firm operated from a home in Scarsdale, N.Y. "It's sort of a win-win situation for everybody involved," asserted Daniel Einbund, vice president of the concern.

Mr. Einbund said the firm presented the idea to Soviet officials in Moscow in December and received a letter of interest.

It then took the letter to the Energy Department. "DOE wanted information about many details, including transportation and what they are going to do with the money," Mr. Einbund said.

According to Mr. Einbund, the Soviets agreed to spend money they receive from the potential \$200 million deal on products and equipment in the U.S. At that point, he said, he was told the proposal had risen "to very, very high levels in Washington and Moscow."

The hardest evidence that the Energy Department is considering a departure from its old ways arrived on Capitol Hill last month. The department submitted a one-line budget proposal that would allow it to buy uranium on the world spot market, which is dominated by Technobexport. The proposal—first reported by Nuclear Fuel, a newsletter published by McGraw-Hill—immediately set off rumblings on Capitol Hill.

"If I read between the lines, I think we are about to enter into an agreement with the Soviet Union," Sen. Pete Domenici (R-N.M.) told William H. Young, the Energy Department's assistant secretary for nuclear energy. Mr. Young replied only that the department was concerned about growing Soviet sales and was looking at "a range of alternatives" to shore up its market.

To ease concerns on Capitol Hill, according to Mr. Einbund, the deal would allow aging U.S. enrichment plants at Paducah, Ky., and Portsmouth, Ohio, to keep operating, although they are believed to be much more expensive to run than newer Soviet plants, which use high-speed centrifuges. The Soviets, he said, would agree to use uranium mined in the U.S. as a feedstock.

Uranium enrichment is an elaborate process that turns natural uranium into a gaseous compound and then restructures it so that an unstable isotope, or rare chemical relative of uranium—called U-235—becomes more concentrated.

The U.S. enrichment program began during World War II as part of the country's nuclear-weapon program. After the war, the U.S. switched most of its uranium-enrichment capability to providing fuel for the then-growing nuclear power industry. For two decades, the U.S. government enjoyed a near-monopoly on the enrichment business in the non-Communist world.

While both U.S. and Soviet uranium-enrichment facilities were originally designed to provide highly enriched uranium for atomic bombs, both countries later switched to a different metal, plutonium, for their nuclear arsenals. Plutonium is derived from a different process.

The major remaining military need for enriched uranium is for fuel for nuclear submarines and ships. According to the Energy Department, 10% of U.S. output is used for military purposes.

C-589

M2, 21, 1990WST

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-11	STATEMENT OF MAL HYMAN	
	MR. HYMAN: Mal Hyman and I'm just a concerned teacher. I will try to cut my remarks so that I don't duplicate some of what has been said previously.	
C-11-01	I am concerned about the process of looking into government documents regarding the environment and accessibility to national security information. The first point, coming from California where we have built nuclear plants on earthquake folds, where U.S. Geological Survey has noted that the plants cannot withstand an earthquake of the magnitude seen as possible by the U.S. Geological Survey. This is true at San Onofre, Southern California, and Diablo Canyon in Central California, and having gone through those hearings for a number of years, I am more than concerned the proper information that is ferreted out isn't properly addressed. I have an even greater concern about notions about national security. We are immediately reminded of past national security needs. A bomber gap of the 1950s, we need to build new bombers. Or a missile gap in the 60s or an ABM gap of falling beyond the Soviet Union and ABM or spending gap or a window of vulnerability under Ronald Reagan, to be capped off by MX missiles and Minute Man III silos, which made absolutely no sense strategically. They became a more tempting target, satisfied none of the national security needs. It's surprising that the public does not follow the debate. The media doesn't follow the debate when good proposals do come from the Soviet Union for verifiable test bands. They aren't properly debated. The Soviet Union unilaterally stops nuclear testing for 18 months and challenges us to do the same. It should be a news story. But then many things should be news stories in the United States. There is still 12 cubic feet of information regarding the John Kennedy assassination, which hasn't been looked into. In this regard, I think it's important to note the whole war in Viet Nam. The history of it was kept secret from the American public. We found out when the Pentagon papers were finally realized by the New York Times and then the government sued the New York	Section 3.3.2 of the EIS discusses seismology.

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

Times for having the audacity to print the true history of the war in Viet Nam after 40,000 Americans had died and 2,000,000 Vietnamese have died. I would respectfully submit to you that there is a definition of national security that was used and is still used.

I mentioned this at the scoping hearings previously, but I want to add to it, so that there is no doubt where I stand on this. George Bush, when he headed the CIA, lied on a regular basis to the Senate Intelligence Committee about the John Kennedy assassination. He was chosen because Colby, the past head of the CIA, was actually answering the questions. This is the man who is determining national security for us.

Opportunities that are unimaginable were blown at this past summit because the public doesn't know what the debate really consists of regarding nuclear weapons. Perhaps it's an activity on the part of the public or apathy and perhaps its G.E. owning NBC and not telling the public what's really going on. It's tough to say there's probably a whole host of reasons, but, suffice to say, there is a great concern about national security and a thorough reassessment is in order for the protection of democracy and for the protection of the earth and it is necessary in this regard with SRS.

Thank You.

C-591

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-12	STATEMENT OF PAUL BECK	
	MR. BECK: Good morning. My name is Paul Beck. I am a resident of Martinez, Georgia. Having reviewed the DOE's Environmental Impact Statement, I still have three concerns over possible restart: DOE priorities, the environment, and the question of need.	
C-12-01	The draft EIS indicates to me that priority will be given to production rather than cleanup. So, 34,000,000 gallons of high level radioactive waste have yet to be properly processed. Some 16,000,000 cubic feet of low-level radioactive waste remains buried in trenches. It is known that some of it is in cardboard boxes. Technetium-99, an isotope present in radioactive salt, is destined to be improperly processed into concrete slabs. While the technology supposedly exists to extract the technetium the DOE has decided this will be too expensive.	Please see the response to Comment C-05-05 on high-level waste.
C-12-02	The preservation of our environment can never be too expensive. The cleanup is expected to take at least a decade, possibly two or more, and cost billions, how does the DOE justify restart when existing problems have yet to be solved?	Please see the response to Comment C-05-03 on waste management and environmental restoration.
	Restart would only compound the problem. I quote from the draft EIS: "Water containing tritium will continue to be discharged through seepage basin, contaminating ground water." "Temporary wetland losses caused by thermal discharges would continue in Still Creek and Penn Branch Corners."	
	Apparently, DOE's preferred alternative is to continue to wreak havoc upon our land and water. No nation is greater than the land upon which its people live. There should be no compromise when it comes to the preservation of our land and water. If the DOE cannot operate SRS in harmony with the environment, then the DOE should not operate SRS at all. They should remain shut down.	
C-12-03	The final problem I have with the EIS is the question of need. It is neither addressed nor answered in the statement. Consider two facts: America presently has some 24,000 nuclear warheads, in addition to a plutonium stockpile of 100 metric tons. Consider all the fire power exploded in World War II, some 3,000,000 tons of TNT,	Please see the response to Comment C-01-01 on the need for tritium and other nuclear materials.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
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3 megatons. The destructive power of all nuclear weapons in existence today stands at 18,000 megatons. That's the equivalent of 6,000 World War II's. Can we possibly need more?

Thank you.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-13	STATEMENT OF CAMILLE RILEY	
C-13-01	My name is Camille Riley. I am a pharmacist and I live in Denmark, S.C. For the past 15 years I have done pharmacy relief work in a five county area—Bamberg, Barnwell, Allendale, Orangeburg, and Hampton counties. Through these 15 years one fact has become more and more obvious to me. In the pharmacies located in the counties adjacent to the SRS I fill many more prescriptions for cancer related medications. In Bamberg, Barnwell, and Allendale counties there are astounding numbers of prescriptions written for medicine to relieve cancer pain. This is one of the reasons I am against the restart of the K, L, and P reactors. Health care is my business and helping safeguard health is my responsibility.	Section 4.1.2 of the EIS addresses the potential additional risk to human health resulting from the continued operation of K-, L-, and P-Reactors. Section 4.1.6 addresses cumulative impacts and health risks from SRS and nearby facilities. The health effects of past operations have been (and being) evaluated by independent agencies, as described in Appendix B; no significant health impacts on the general public have been identified. Section 3.7 (Tables 3-13 and 3-14) and annual environmental monitoring reports issued by DOE describe the extent of contamination from prior operations. Section 4.1 presents project environmental impacts from continued reactor operation.
C-13-02	I have studied the Environmental Impact Statement and my fears have not been resolved. They have increased dramatically. On page S-5 it is admitted that there will be more cancer fatality risks even under normal operations, without even considering accidents. If the K, L, and P reactors are terminated the cancer fatality risks will diminish. That is a significant reason to never restart these three reactors. Have you ever watched someone die of cancer? I have. My husband officially died of cancer in 1971, but he actually died some every day for the 11 1/2 months he lived after diagnosis. He went from 190 pounds to 90 pounds. The cancer destroyed his lungs so that every breath was a gasp. My husband was 34 years old when he died and he never smoked cigarettes. Was he one of these cancer fatality risks quoted on page S-5? Should that have been a consolation to my daughters, who were 5 and 10 years old when their father died? NO-ONE, I emphasize NO-ONE should be exposed to such a risk.	The increased cancer (excess fatality) risk to the population within 80 kilometers (50 miles) of SRS resulting from the operation of K-, L-, and P-Reactors would be 0.0088 (8.8×10^{-3}) per year or one additional cancer death every 110 years. The calculated total cancer fatalities per year in the 1980 population of 589,800, based on the annual average U.S. cancer fatality risk, are about 1,100. Please see Section 4.1.6 of the EIS and Table 2-

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	This Environmental Impact Statement is filled with the word "PLAN." On page 2-59 we are told the panel <u>plans</u> to complete its review before resuming production. Also, DOE <u>plans</u> to finish replacing the existing rod positioning instruments with solid state components. Life is filled with plans that are not fulfilled. I <u>planned</u> to arrive an hour earlier this morning but traffic interfered with my plans. When dealing with nuclear reactors the verb <u>plan</u> is not sufficient.	
	On pages 2-74 through 2-82 we are given the comparison of Impacts of Alternatives. Alternative 3, which is Termination of K, L, and P reactors, would mean no thermal discharges, no groundwater seepages, significantly less usage of water, diminishing erosion, recovery of habitat and ecosystems, diminishing aquatic chemical concentration, elimination of liquid effluents, substantial reduction in generation of solid, domestic, and hazardous wastes —but to be the most important of all is <u>No Cancer Risks Due to Radioactive Releases!!!!</u>	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-14	STATEMENT OF ELVIRA THOMPSON	
	MS. THOMPSON: My name is Elvira Thompson. I don't represent anyone. I am a member of Greenpeace, but I am just representing myself as a U.S. citizen.	
C-14-01	My speech is going to be very, very short. It means no more nuclear weapons. We live on the planet Earth. The longer we use it, the more we try to destroy it. No more nuclear weapons. Bear with my accent, okay?	The need for nuclear weapons is beyond the scope of this EIS.
C-14-02	The U.S. government, including the president, has no way or no means to clean up the Savannah River Site after the meltdown. Just think about Chernobyl. I think everybody is thinking of Chernobyl. Our government cannot control the savings and loan institutions, the drug traffic in our air space or coastal water, our borders and our highways. Our government cannot help save the American farmers. Our government could not help save the two whales in Alaska. Our government could not Exxon and the Valdez oil spill that contaminated our seas. Our government cannot prevent a nuclear accident at the Savannah reactors. No more nuclear weapons. We want protection from our government. We don't want excuses from our senators. No more nuclear weapons. We don't want excuses from our representatives. No more nuclear weapons. We demand a government for the people, by the people and, we, the people say no more nuclear weapons. Thank you.	Because the nuclear and physical-chemical characteristics of the SRS reactors are fundamentally different from those of the Chernobyl reactors, similar accidents at SRS reactors are physically impossible.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
COMMENTS OF MRS. ELVIRA E. THOMPSON 115 E Steele Drive Summerville, SC 29483		
	No more Nuclear Weapons. We live in the Planet Earth. The longer we use it the more we try to destroy it. "No More Nuclear Weapons." The U.S Government, including, the President, has no way, or no means, to clean up the Savannah Reactors after a Melt Down. (Just think of CHERNOVOL). Our Government can not control the saving and loans institutions. The Drug Trafficking within our air space, our coastal waters our borders or our hiways. Our Government can not help save the American Farmers. Our Government could not save the two whales in Alaska. Our Government could not control Exxon and the Valdiz oil spill contaminates our seas. Our Government can not prevent a nuclear accident at the Savannah Reactor. No More Nuclear Weapons. We want protection from our Government. No More Nuclear Weapons. We don't want excuses from our senators. No More Nuclear Weapons. We dont want excuses from our Representatives. No More Nuclear Weapons. We demand a Government for the People By the People, and we the People say No More Nuclear Weapons. Thank you.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-15	STATEMENT OF DR. KARL Z. MORGAN	
	Summary of paper entitled <u>Comments on the May 1990 EIS</u> <u>Regarding Operation of the</u> <u>K, L, and P Reactors</u> <u>at Savannah River Plant</u> By Dr. Karl Z. Morgan May 25, 1990	
	This Environmental Impact Statement [EIS] is very poorly prepared. It does not have unbiased and scholarly input by highly qualified independent scientists and engineers. Of the 39 persons preparing the report only 3 have the PhD degree and none of them is a certified health physicist. None is an outstanding radiobiologist or a specialist in internal dose.	
C-15-01	One of the principal reasons for operating the Savannah River Plant [SRP] reactors is to produce plutonium-238 for thermocouple-produced electricity for satellites and "Star Wars" but such uses are extremely dangerous and should be reconsidered. The present maximum permissible concentration (MPC in $\mu\text{Ci/cc}$) for Pu-238 is too high by a factor of 11,000 in air and 7,000 in water. The MPC values for Pu-239 are too high by a factor of 6,000 in air and 5,000 in water. The MPC values used for tritium are 90 times too high in air. The reasons for these large factors of underestimated radiation-risk are lack of recognition of larger migration factors, chemical forms, larger body uptake, larger RBE (relative biological effectiveness) values, changes from ICRP-2 (International Commission on Radiological Protection) to ICRP-30, greater cancer risk estimates in BEIR V (Biological Effects of Ionizing Radiation) than in BEIR III, etc.	DOE uses the most current recommendations of cognizant national and international radiation protection organizations for the assessments of dose and the consequent health effects. These organizations have not accepted Dr. Morgan's current opinions.
	Although top management at SRP has changed, some of the group leaders, section chiefs and supervisors are the same or are of similar motivation. That is they are the same persons that claimed radiation levels 40 times background around reactors K, L, and P on March 14, 1955 were caused by fallout from the Nevada Weapons Test Site; a cloud of dust traveled 2,000 miles across the U. S. and settled directly over reactors K, L, and P with concentric isopleth closed dose circles surrounding these reactors - a modern miracle!	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-15-02	The release rate of 197,000 Ci of H-3 (tritium) per year by reactors K, L, and P given in this EIS is shocking. It would require a circular lake 63.5 miles in diameter and an average depth of 1 meter to reduce the annual H-3 discharge to the Environmental Protection Agency limit of 4 mrem for potable water. One meter (39.77 inches) is not far from the rainfall per year in South Carolina and Georgia. There was a long delay (years) in the Department of Energy/Nuclear Regulatory Commission-plan to evaporate cleanup water at TMI-2 and release only 17,000 Ci of H-3 to the environment because people living nearby did not wish to accept an increased cancer risk and genetic and teratogenetic damage to their children. Here this problem is 11.6 times more serious.	The cited tritium release is to the atmosphere, not in liquid waste; accordingly, it would be more appropriate to compare the atmospheric volume required for dilution. Using an average atmospheric mixing depth of 500 meters (Section 3.5.4 of the EIS), it would require the air over SRS to be replaced about 50 times a year to dilute the annual release to below the EPA NESHAPS of 10 millirem per year; because the mean site wind speed is 3.25 meters per second (Section 3.5.2), the air over the Site is replaced about every 8 hours, on average, or more than 1,000 times a year.
C-15-03	This EIS does not provide backup and source data by which a person can check the estimated releases and doses to the plant workers and members of the public. Thus we at this hearing are being asked "Do we trust and have faith in what is presented to us by these 39 people?" We cannot answer, "Our estimates and calculations do or don't agree." Even if we were provided the source data, it originates in considerable part from SRP health physicists and they are the ones who testify in court against the workers and members of the public who seek compensation for radiation damage. A few months ago in Columbia, S. C., the Secretarial Panel for the evaluation of Epidemiological Research Activities (SPEERA) recommended that epidemiological research be supported by the Department of Health and Human Services and no longer by the Department of Energy [DOE]. For similar reasons health physicists at SRP and other DOE operations should report to DHHS.	NEPA regulations require DOE to make public all documents and sources of information referenced in the EIS. As noted in the Foreword to the EIS, DOE placed these references in Public Reading Rooms when it issued the EIS for the benefit of those requiring more technical detail or source data on particular subjects.
C-15-04	In conclusion I recommend that K, L, and P not be operated and that further consideration of their operations not be made unless and until an EIS is published by a competent and properly selected group of scientists and engineers and in no case should approval be given before Dr. Alice Stewart has completed the epidemiological study of SRP workers and similar study of members of the public living near SRP is completed.	As noted in Appendix B (Section B.1.5), Oak Ridge Associated Universities published an epidemiological study of SRS workers in 1988, and a follow-up study is under way. Section B.1.5 also describes the past epidemiological studies of the public in the SRS

Karl Z. Morgan

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
		vicinity, which have not indicated any unusual health effects associated with SRS operations. An independent study by the National Institutes of Health - National Cancer Institute reported cancer incidence in populations around commercial and government reactors (Jablon, S., et al., 1990, <u>Cancer in Populations Living Near Nuclear Facilities</u> , National Institutes of Health, National Cancer Institute, Washington, D.C.).

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-15-05	Comments on the May 1990 Draft Environmental Impact Statement, Operation of the K,L and P Reactors at Savannah River Plant	
	Dr. Karl Z. Morgan Atlanta, Georgia May 24, 1990	
	<u>Introduction:</u> I have made a hurried examination of the May 1990 draft EIS regarding operation of the Savannah River Plant's K, L, and P reactors and am not favorably impressed with the quality, credibility, or usefulness of this report. Perhaps, however, this is the best one could expect when it is noted that of the 39 persons acknowledged as authors of the report, only three have PhD degrees. I was surprised also to find that although the crux of the report was the dose and health risks to workers and members of the public from ionizing radiation exposure, not a single author is a certified health physicist (the profession that specializes specifically in effects of radiation dose) and none of the authors is a recognized radiobiologist or a person specializing in internal dose—the principal question at issue.	The EIS addresses all environmental, health, and safety impacts of the continued operation of K-, L-, and P-Reactors, and relies on referenced documents prepared by a large number of professionals qualified in a wide variety of technical and scientific disciplines, including health physics.
C-15-06	The list of recipients of the report does not include persons who have through the years criticized SRP for its radiation hazards and testified in court or public hearings in opposition to unsound practices of SRP—persons such as Edward P. Radford, Alice Stewart, Arjun Makhijani, Brent Blackwelder, Bernd Franke, and myself, only to mention a few.	DOE makes the EIS available to any member of the public who requests a copy. DOE does not maintain a listing of its critics.
	In view of the high background levels and high excursion levels of radioactivity reported at SRP and environs in the past, it would hardly be short of a miracle if the population dose to the projected 850,000 persons living within 80 km in year 2000 could be kept to 21.4 person-rem per year from atmospheric releases and the drinking water dose to persons beyond 80 km to 9.3 person-rem (Sec. 4.1.2.3 of the EIS) But perhaps miracles do happen at SRP. One of the most remarkable miracles occurred on March 14, 1955 as discovered by Bernd Franke and Robert Alvarez.¹ DuPont (the operator of SRP at the that time) recorded dose rates near reactors K,L and P that were approximately 40 times background and levels of over 10 times background out to 80 km. However, DuPont reported that this activity did not result from an "incident" at SRP but was the result of	
	¹("External Gamma Radiation around the Savannah River Plant," Bernd Franke and Robert Alvarez, <i>AMBIO</i>, Vol. 14 no. 2 (1985).	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	fallout from a Teapot/Hornet nuclear test explosion from a 90 m tower at the Nevada Weapons Test Site. Franke and Alvarez plotted the dose rate values (as measured by the SRP health physicists) on a map extending from 20 miles to the west of Augusta, Georgia to 10 miles east of Orangeburg, S.C. (a linear distance of 135 miles) and drew lines on the map connecting locations of equal dose rates (isopleth lines) and the lines all formed irregular circles around the K, L and P reactors (they circumscribed reactor K,L and P). In other words DuPont argued that the fallout cloud traveled 2,000 miles across the US and fell smack over SRP. Perhaps such atmospheric miracles had not occurred since thousands of years ago when "Moses stretched out his hand over the sea, and the Lord caused the sea to go back—and the children of Israel went into the midst of the sea upon dry ground; and the waters were a wall unto them on their right hand, and on their left" (from Exodus 14, vs 21 & 22).	
C-15-07	The EIS does not provide input data that can be used by an independent group of scientists and engineers (a group without a conflict of interest) to estimate the annual population dose (person-rem) so one is tempted to ask, "Were the group of 39 persons preparing the EIS and the committees of DOE and NRC that evaluated this EIS selected by the Tompkins Procedure?" The Tompkins Procedure is as follows, "The basic approach to the report would be to start with a simple, straightforward statement of conclusions. We would then identify the major questions that could be expected to be raised in connection with these conclusions. It would then be a straightforward matter to select the key scientific consultants whose opinions should be sought in order to substantiate the validity of the conclusions or recommend appropriate modification,"—from a letter from Dr. Paul C. Tompkins, Deputy Director of Division of Radiation Protection Standards, dated September 25, 1962 to Atomic Energy Commissioner Haworth with copies to chairman Seaborg.	Please see the response to Comment C-15-03 on input documents used in support of the EIS.
	Perhaps the DOE would rebut the above references to the Tompkins Procedure by a comment such as "well that was the bad situation with our predecessor the old AEC. Things such as this or the internal release of thousands of curies of iodine -131 at Hanford Works to investigate the feasibility of using fission products in conjunction with chemical warfare could not happen now with DOE and its present contractors in charge." (Remember, the total release of I-131 in the Three Mile Island (TMI) accident is	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	estimated at only 17 curies). I do not agree, however, with such a retort because of the many skeletons that have been found recently hanging in the DOE closets. The most tightly locked closet to which I have been exposed recently related to the DOE refusal to turn over to the TMI Public Health Fund (TMI-PHF) radiation records of workers at SRP, Hanford, Oak Ridge, Los Alamos, Rocky Flats, Mound, etc. for independent epidemiological analysis by the renowned epidemiologist, Alice Stewart.	
	Following the TMI accident, over a decade ago, there was a court hearing in Harrisburg, Pennsylvania before Judge Rambo relating to damage from the reactor accident. The sole witnesses that offered testimony were Dr. Victor P. Bond for the defense and myself for the plaintiffs. Mr. Harkins was the defense lawyer and Mr. David Berger the plaintiff lawyer in this class action suit. We were awarded \$20 million to cover damage to businesses and others in the fallout area at the time of the accident and \$5 million for educational purposes and research relating to the radiation risks associated with the accident. The David Berger law firm was to administer these funds. It handled directly the \$20 million for early damages but set up the Three Mile Island Public Health Fund (TMI-PHF) committee with me as chairman to assist in administration of the Fund. Other members of the TMI-PHF committee are renowned scientists and doctors: Prof. Dean Abrahamson, Dr. John Cobb, Dr. Thomas Cochran, Dr. H.J. Gieger, Prof. I. McHarg, Dr. Edward P. Radford and Prof. G. Woodwell with Dr. J. Berger, Secretary. We (the TMI-PHF) have let a number of research contracts on dose reconstruction, internal dose, emergency planning, etc., a number of which have been completed. One of the contracts was for \$1.4 million to Dr. Alice Stewart to conduct an independent epidemiological study of the occupational exposure records as they relate to mortality records of SRP and of the other DOE laboratories and production facilities. The past few years have been a period of extreme frustration and discouragement for our TMI-PHF committee and the Bergers who have been forced to make use of the Freedom of Information Act and every imaginable legal leverage to pry the data from the secret files (skeleton closets) of the DOE. Each punch the Dan Berger made was like pounding a jelly fish—a big dent was made but then the DOE returned seemingly as invulnerable as ever. Finally, last week the battle was won (or I believe it was) and DOE is now in the process of releasing this data to the TMI-PHF. This exasperating struggle with the DOE has probably cost Dan Berger a	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	few years of his life and all who value democracy and justice in our courts owe him an expression of gratitude. How this victory over the might DOE finally came about deserves a word of explanation. When the new Secretary of Energy, James D. Watkins, came into office recently and was confronted with a blast of misdeeds by the AEC, DOE and their contractors, he indicated his desire to make sweeping amends. In addressing this TMI-PHF problem he set up a Secretarial Panel for the Evaluation of Epidemiologic Research Activities (SPEERA) with Dr. Kristine Gebbie chairwoman and indicated he intended to abide by its recommendation. For this, all who seek an independent and more credible evaluation of the risk from chronic, low level exposure to ionizing radiation are exceedingly grateful to Secretary Watkins. In the early session of the SPEERA meeting in Columbia, S.C. in February 1990 it looked for a while that we had lost our battle and SPEERA would recommend the status quo. It was then that the TMI-PHF and Dan Berger played our trump card. We had known for some time of "irregularities" in the behavior of DOE and its contractors in the treatment of epidemiological data on radiation workers and the worst case of which we were aware was the treatment of Dr. Gregg Wilkinson when he was employed as a senior epidemiologist at Los Alamos National Laboratory. Dr. Wilkinson was put on the stand at the Columbia hearings where he related that his studies at Los Alamos found an excess of cancers of brain, esophagus, stomach, colon and prostate of workers at the Rocky Flats Plant where they make triggers from plutonium and tritium provided by SRP and Hanford. Rocky Flats was a subcontractor of Los Alamos and officials of Los Alamos and DOE berated and pressured Wilkinson to suppress or alter his findings and finally after demotion he left Los Alamos. This apparently broke an Achilles' heel of DOE and changed the tide. The recommendation of SPEERA now is that all research on radiation dose reconstruction and long-term health effects from working in or living near weapons plants be transferred to another federal agency that has no direct connection with weapons production; presumably this agency is the Department of Health and Human Services (DHHS). <u>The Problem in the Restart and Operation of K,L and P Reactors at SRP</u> The above mentioned victory of the TMI-PHF in no way solves all the problems or clears the way for immediate restart of the K, L,	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-605	and P reactors. Neither does it solve some major problems of radiation exposure at other DOE operations and in other areas such as exposure of atomic veterans, natives in the South Pacific weapons test area and workers at the Nevada Test Site and families and farmers and ranchers that were clobbered with radiation fallout during the infamous period of atmospheric testing of nuclear weapons. This victory, however, is a first step forward in the hope that Secretary Watkins' promise will shortly bring about other badly needed corrections. A major problem that demands correction is in the collection, interpretation, management and use of basic radiation exposure data not only when we face the question of restart and operation of reactors K, L and P but when workers and neighbors of SRP and others exposed to DOE generated ionizing radiation (atomic veterans, fallout victims, test site workers, radiation workers at nuclear power plants, weapons plants and national laboratories and members of the neighboring public) seek compensation for radiation injury. As it now stands it is virtually impossible for any of these plaintiffs of radiation injury to receive compensation when their cases go to court. The difficulty is that the health physicists that collect radiation exposure data and interpret it in depositions and in court cannot be relied on because they have a serious conflict of interest. This is a situation similar to that faced by Dr. Wilkinson when he was working at Los Alamos. Many a health physicist has been passed over at promotion time or some have lost their jobs when they failed to depreciate radiation risks sufficiently or when they reported dangerous radiation hazards. It is virtually impossible for a radiation victim or his widow to find a health physicist that will testify in court on his or her behalf regarding a radiation injury but there are thousands of health physicists on tap, ready and anxious to testify on behalf of the defense, i.e. to protect the national laboratory, the nuclear weapons plant or the nuclear power plant from liability for radiation injury. (See attachment 1, "The Viewpoint and Experience of a Scientist Who Has Been a Plaintiffs' Expert Witness in Many Radiation Cases," by Karl Morgan, International Perspectives in Public Health, Vol. 4, Issue 1, Spring 1988). In our democratic society one might suppose he could find support and help in obtaining justice for radiation injury or injustices of the DOE from our Department of Justice but just the contrary is true. Mr. Don Jose of the DOJ not only acted as defense lawyer for parties attempting compensation for radiation induced cancer but organized courses in several states to train health physicists and lawyers in	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	methods by which industry and the government would win in radiation damage cases. I have testified in court and offered depositions and other assistance in over 150 cases of radiation injury and been opposed by health physicists testifying for the defense who offer testimony under oath that even defies the basic laws of physics and chemistry only to have the judge in his written decision praise the testimony of these health physicists and deride me for my testimony and subject me to character assassination even after admitting he did not understand my testimony for "it might as well have been in Greek." I was a principal organizer of the Health Physics Society and its first president and was then proud of it as a scientific and professional organization but alas, now I must recognize it is a trade union of DOE and the union that heels to the wishes of DOE and the nuclear industry and of its satellites such as the Nuclear Regulatory Commission and the Veterans Administration.	
C-15-08	In this case the SRP EIS is based on data collected by SRP health physicists and interpreted by 39 persons only 3 of which have the PhD degree. No basic data is provided in the EIS on which one can check calculations and suppositions. The only way a scientist or an honest citizen could approve this EIS is by faith in the knowledge, expertise and honesty of the SRP health physicists who collected the data and these 39 persons, all of whom have a conflict of interest.	Please see the response to Comment C-15-03 on input documents used in support of the EIS.
C-15-09	Another problem with this EIS is that it considers the radiation protection standards adopted by the DOE as set by the International Commission on Radiological Protection (ICRP) and the U.S. National Council on Radiation Protection and Measurement (NCRP) as gospel truth. Nothing could be more in fault. (See Attachment 2, "ICRP Risk Estimates--An Alternative View," by Karl Z. Morgan, chapter 11 in book Radiation and Health, edited by R.R. Jones and S. Southwood, J. Wiley & Sons, 1987). If all members of ICRP and NCRP resigned who work for the nuclear industry or receive research funds from it, both would be ghost organizations with very few if any members.	Please see the response to Comment C-15-01 on radiation protection organizations.
	One of the major health problems associated with SRP is the production of plutonium-238. A publication by W.S. Snyder, M.R. Ford and myself in 1964 indicated the hazards of Pu-238 were 150 times that of Pu-239. ("Relative Hazard of the Various Radioactive Materials," Health Physics Journal Vol. 10, p. 151, 1964). One of	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-607	the principal purposes for the operation of SRP is the production of Pu-238 (86.4 year half life) for use in thermocouple generators to furnish non-propulsion power in satellites and for "Star Wars." I prepared testimony opposing this use of Pu-238 in the Galileo satellite mission to Jupiter. (See Attachment 3, "A Quick Look at Some of the Radiation Hazards Associated with the Galileo Mission," Sept. 19, 1989). This satellite is designed to swing around Venus to gain energy by the slingshot principle, then back around the earth and then fly off with enough energy to reach Jupiter. It carries 50 pounds of Pu-238 in its generators. Should any of its solid state navigation instrumentation malfunction, for example, due to excessive heating as it slings around Venus, it could be a few degrees off course as it makes its second sling around the earth and enter the earth's atmosphere. It would be incinerated, falling all over the earth as radioactive dust. This 50 pounds of plutonium should be compared with the 38 pounds (17.2 kilograms) of plutonium already on the earth from atmospheric testing of nuclear weapons contributed by the folly of five nations when they tested nuclear weapons without regard to fallout and induced cancers in people all over the earth. This serious accident with Galileo could result in Pu-238 in the lungs of millions of people and cause thousands of deaths. I hope and pray Galileo stays on course.	The DOE sent a copy of my testimony in opposition to this risky use of Pu-238 to the NCRP for comment and the chairman of the NCRP made erroneous comments about my testimony and endorsed this use of Pu-238. Thus it happens that NCRP that sets the radiation standards of DOE, NRC, and SRP in the U.S. cannot be considered an independent scientific body but in considerable part an organization like ICRP to depreciate radiation risks and lend support to nuclear industry. This, however, should not be a surprise when one notes that NCRP receives financial support from DOE and other government agencies, e.g. it received grants of \$280,125 from DOE last year. Perhaps at this point it would be applicable and sobering to recall the advice given to members of the Health Physics Society in 1971 when Dr. D.W. Moeller, incoming president of the society and later chairman of the ACRS, urges society members to "speak out and make known our positions on such issues as nuclear power safety and radiation protection guides" and "Let's all put our mouth where our money is." How many pieces of silver does it take to buy a health physicist?
	The risks of internal dose from all isotopes of plutonium are extremely serious and have been vastly underestimated by these	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	standards setting bodies from the beginning of the nuclear age. So far as I have been able to determine I published the first paper in scientific journals showing how to calculate internal dose from the various radionuclides ("Tolerance Concentrations of Radioactive Substances," K.Z. Morgan, Journal of Physical & Colloid Chemistry, Vol. 51, p. 984, 1947). In this I showed that internal dose from plutonium is very hazardous and I concluded this from the limited rat data then on Pu-239 (only data on 3 rats that were administered Pu-239). The rat study was conducted by Dr. Joseph Hamilton using Pu-239 produced in the Berkley University cyclotron. The values I published for Pu-239 MPCs (maximum permissible concentration) were 2.5×10^{-9} uCi/cc of air and 2×10^{-3} uCi/cc of water.	
	Later (1959) when more data were available the ICRP and NCRP committees, both of which I was chairman, showed that plutonium radionuclides were even more hazardous than thought to be the case in 1947 so we reduced the MPC to 2×10^{-12} uCi/cc in air and 10^{-4} uCi/cc in water and food for Pu-238, 239 and 240. (ICRP-2 in 1959 and NCRP HB #52 in 1953) These were reductions by factors of 1,250 and 20 respectively when more but meager human data were available. In 1975 I made a detailed study of plutonium and indicated the ICRP-2 vales should be further reduced by a factor of at least 200. ("Suggested Reduction of Permissible Exposure to Plutonium and Other Transuranium Elements," by K.Z. Morgan, American Industrial Hygiene Association Journal, 567, August 1975). needless to say this caused some flack in the halls of the nuclear zealots and my suggestion was ignored by application of the Tompkins Procedure mentioned above. More recently Dr. Stillwagon and I published a paper showing MPC values of Pu-239 were indeed too large by at least 2 orders of magnitude ("In-situ Dosimetry of Pu-239 in Bone Using Polycarbonate Foils and Electrochemical Etching," by G.B. Stillwagon and K.Z. Morgan, International Perspectives in Public Health, Vol. 5, Issue 1, Summer 1989.)	
	In 1979 ICRP recognized the risks of radiation induced cancer were greater than they were considered to be when ICRP-2 (1959) was published but by a perverted set of arguments actually increased MPC values for most of the radionuclides. (See Table 3 in Attachment 2). I was appalled by this move of ICRP but by then I was only an emeritus member of ICRP and my vote hardly counted. On the following page I list changes (factors of increase showing MPC values in the 1959 ICRP-2 and in the 1979 ICRP-30 for a few of the radionuclides.	

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

Radionuclide (half-life, y)	Values of MPC given in uCi/cc In ICRP-2 (1959)	In ICRP-30 (1979)	Factor of Increase
H-3 (12.26)	5×10^{-6}	2.2×10^{-5}	4.4
C-14 (5,730)	4×10^{-6}	8.1×10^{-5}	20
S-35 (0.24)	3×10^{-7}	8.1×10^{-7}	2.7
Co-58 (0.20)	5×10^{-8}	2.7×10^{-7}	5.4
Co-60 (5.26)	9×10^{-9}	1.4×10^{-8}	1.6
I-131 (0.022)	9×10^{-9}	1.9×10^{-8}	2.1
Cs-134 (2.05)	10^{-8}	5.4×10^{-8}	5.4
Cs-137 (30)	10^{-8}	5.4×10^{-8}	5.4
Pu-238 (86.4)	2×10^{-12}	8.1×10^{-12}	4.1
Pu-239 (24,390)	2×10^{-12}	5.4×10^{-12}	2.7

Values of MPC in Water Given in uCi/cc

H-3	0.1	0.3	3
C-14	0.02	0.009	0.45
S-35	0.002	0.04	20
Co-58	0.003	0.006	2
Co-60	0.001	0.002	2
I-131	6×10^{-5}	10^{-4}	1.7
Cs-134	3×10^{-4}	3×10^{-4}	1
Cs-137	4×10^{-4}	4×10^{-4}	1
Pu-238	10^{-4}	3×10^{-4}	3
Pu-239	10^{-4}	2×10^{-4}	2

On May 4, 1988 I sent a letter to Mr. Lendo W. Zech, Jr. Chairman of the Nuclear Regulatory Commission (See Attachment 4 - Zech, May 4, 1988) deploring the decision of the NRC staff to adopt the values of ICRP-30 but never received the courtesy of a reply. So now when SRP should tighten its safety measures by lowering the MPC values, it has instead relaxed its safety measure and increased the MPC values finding it easier to stay under the wire.

In order not to prolong this discussion, I reluctantly am not mentioning some very serious problems with radionuclides such as carbon-14 and am limiting it to three radionuclides (Pu-239, Pu-238, and H-3). But before leaving the discussion of the mounting realization of terrific hazards of plutonium we should recall a paper by R.P. Larsen and R.D. Oldham ("Plutonium in Drinking Water: Effects of Chlorination on its Maximum Permissible Concentration, Science, Vol. 201, p. 1008, Sept. 1978). This paper also stirred up

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-15-10	a hornets nest because it indicated when plutonium was ingested in rats the retention was 0.006% in the Pu (III) state, 0.001% in the Pu (IV) state and 1.75% in the Pu (VI) state, while in setting the MPC for plutonium ICRP in 1959 we had assumed a bone retention for Pu of 0.0024%. The problem was that Pu in drinking water is in the Pu (VI) state (1.75% retention) but when food is ingested along with the contaminated water it goes into the Pu (IV) state (0.001%). Needless to say this problem was easily solved by the Tompkins procedure and now ICRP-30 and DOE use 0.001%. <u>Tritium</u> H-3 has always been sort of an outsider. For example, it often shows an isotope effect because $(H-3/H-1)=3$ whereas it is small for all other elements, e.g. $(Sr-90/(Sr-89)=1.01$, $(Cs-137)/(Cs-134)=1.02$, etc. It is the only radionuclide for which we assume as much is taken into the body via skin penetration as by inhalation. It is the most invasive of all radionuclides and distributes itself rather uniformly to all organs and all body tissues on a uCi/g basis. It presents a somatic, genetic and teratogenic risk. It cannot be separated from liquid waste by evaporation, a process used to concentrate most radionuclides. One of the major forms of damage from H-3 is that when it is incorporated in the nucleus of a body cell and emits its beta particle. It becomes a helium atom, i.e. ${}^3H \rightarrow B + {}^3He + \nu$. This genetic chain now loses information by the loss of a hydrogen atom that is converted into helium gas. During the two decades I was a full member of ICRP there was constant pressure to set the RBE (relative biological effectiveness) at 1 rather than 1.7 as given in ICRP-2. The H-3 emits a very low energy beta of only 18.6 KeV and thus with its slow-moving velocity it takes more time to pass an atom of tissue giving a far greater chance of pushing an electron out of a tissue atom, i.e. its specific ionization (ip/cm) is large and approaches that of the alpha particles from plutonium, i.e. its specific ionization is about 10% that of Pu-239 alphas. This alone is sufficient reason why the RBE of H-3 betas should be at least 1.7. The ICRP Internal Dose Committee of which I was chairman made an extensive study of the scientific literature on the damage caused by H-3 and we found studies indicating an RBE from 1 to 5. Unfortunately, there was pressure to do away with our RBE of 1.7. One ICRP member even went so far as to lament the difficulties they were having in keeping down to the H-3 MPC in their weapons plant and our lowering the RBE	The EIS uses ICRP-30 dose conversion factors modified by ICRP-48 recommendations to account for higher systemic uptake from the gastrointestinal tract.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-15-11	to 1 would be a great help. And so the RBE of H-3 is now set at 1 and this is what is being used in this SRP EIS. Thus the way of reducing an increasing risks in weapons production plant has been to get ICRP and NCRP to relax radiation protection standards, raise the MPC values and have them adopted by DOE and NRC.	Please see the response to Comment C-15-01 on radiation protection organizations.
C-15-12	It is noted in Table 4-3 of the EIS that the expected annual release to the atmosphere of H-3 is 197,000 Ci. I consider this outrageous. The 41.7 Ci annual release of C-14 is very bad also, but I will not take time to discuss this here. In order to reduce the air concentration to a level corresponding to the EPA exposure level of 25 mrem/y, this requires $1.37 \times 10^{13} \text{ m}^3$ of air ($13,700,000,000,000 \text{ m}^3$). Or it would require a circular lake one meter deep and 63.5 miles in diameter to dilute this water to the EPA level of 4 mrem/y for drinking water. For comparison, as chairman of the TMI-PHF I was very concerned regarding plans of the NRC and DOE to evaporate the TMI-2 liquid waste and release the H-3 into the atmosphere. However, it involved at most only about 17,000 Ci, not 197,000 Ci. Attachments 5, 6 and 7 indicate what I had to say against this release at TMI-2 and most of this applies to releases at SRP in the present case. <u>Conclusions</u> 1) This EIS is very poorly prepared and does not have the unbiased and scholarly input of highly qualified, independent scientists. 2) A major reason for operating reactors K, L, and P is the production of Pu-238 for thermocouple generators used in space exploration and "Star Wars." Solar energy should be used for earth orbiting satellites and radionuclides that are less hazardous than Pu-238 should be used for missions to the outer planets and beyond. (See attachments 5, 6 and 7) Plans for "Star Wars" should be discontinued. So, there may be very little need for Pu-238, perhaps the most dangerous substance known. 3) Account is not taken of the fact that BEIR V¹ completely outdates and makes obsolete BEIR III and all the DOE, EPA and NRC radiation standards on which this EIS is based. Several recent ¹Health Effects of Exposure to Low Levels of Ionizing Radiation Radiation, BEIR V, Committee on the Biological Effects of Ionizing Radiations, Board on Radiation Effects, Research Commission on Life Sciences National Research Council, 1990.	Please see the response to Comment C-15-02 on atmospheric releases.

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

publications show that if one considers the slope of the curve of cancer versus dose at low doses for Hiroshima and Nagasaki the BEIR V Report underestimates the cancer risk by a factor of 2 to 30 (See John W. Gofman, "Warning from the A-Bomb Study about Low and Slow Radiation Exposures, Health Physics, 117, January 1989; Rudi H. Nussbaum, "New Data Inconsistent with Scientific Consensus on Low Radiation Cancer Risks," Health Physics, 961, June 1989; K.Z. Morgan, "The Effect of Low Level Radiation," Health Physics 964, June 1989 and R.H. Nussbaum, "Direct Estimates of Cancer Risk at Low Doses from Recent Mortality Statistics of A-Bomb Survivors [in publication]). However, the BEIR V report is a giant step forward and the SRP EIS should keep pace. Cancer risk values from BEIR III and BEIR V and ratios are as follows.

Cancer Risk (0 = radiation induced cancer/rem) as given on page 176 of BEIR V Report for a single exposure.²

	0 from BEIR III		0 from BEIR V	
	<u>Male</u>	<u>Females</u>	<u>Male</u>	<u>Females</u>
Leukemia	2.74×10^{-5}	1.86×10^{-5}	1.18×10^{-4}	8.00×10^{-5}
Nonleukemia	4.21×10^{-5}	6.25×10^{-5}	6.60×10^{-4}	7.3×10^{-4}
Total Cancer	6.95×10^{-5}	8.38×10^{-5}	7.70×10^{-4}	8.10×10^{-4}

Ratios BEIR V
BEIR III

	<u>Male</u>	<u>Female</u>	<u>Total</u>
Leukemia	4.0	4.3	4.2
Nonleukemia	15.7	11.2	13.4
Total Cancer	11.1	9.7	10.4

As indicated by the above table, BEIR V increases the risk of radiation induced cancer above that of BEIR III by an overall factor of 10.4 and since BEIR V underestimates the risk by a factor of 2 to

²See "Radiation Induced Cancer from Low-Dose Exposure: An Independent Analysis," John W. Gofman, C.N.R. Book Div. P.O. Box 11207, San Francisco, CA 94101. This details a number of flaws in BEIR-V and underestimates of risk.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-15-13	3, all risk estimates applied to doses in the SRP EIS must be increased by a factor of $10.4 \times (2 \text{ to } 3) = 21 \text{ to } 31$ (avg. 21).--See subnote 2, Gofman for details. Similarly the EPA limit of 25 mrem/y for persons living near a nuclear power plant and the 4 mrem/y for potable drinking water must be reduced to no more than 1.2 mrem/y and 0.2 mrem/y, respectively.	As noted in Section 4.1.2.6, the cancer risk factor used in the EIS to estimate radiation-induced health effects is 4×10^{-4} per person-rem, or about half of that given for a single acute exposure in BEIR V. BEIR V also indicates (page 6) that "for low LET radiation, accumulation of the same dose over weeks or months, however, is expected to reduce the lifetime risk appreciably, possibly by a factor of 2 or more." Thus the risk factor used in this EIS for normal releases of radioactive materials is consistent with the findings of the BEIR V committee.
C-15-14	4) The present MPC levels to which this EIS relates (ICRP-30) are too high. For example, the value for Pu is too high by a factor of at least 11,000 for Pu-238 in air and 7,000 for Pu-238 in water. The value for Pu-239 in air is high by a factor of 6,000 and 5,000 in water. The MPC values for H-3 in air are too high by factors of about 90 in air and 60 in water. Note that these factors are less than the product of all the factors discussed in this report because some of the factors are interrelated. The principle reason the BEIR V cancer risk values are too low by a factor of 2 to 3 is that BEIR V ignores the fact that the cancer risk curve is supralinear at low doses (see attachment 2 and subnote 2, p. 9 Gofman). 5) Although the SPEERA panel apparently will succeed in moving DOE epidemiological research from DOE supervision, a major problem still remains in that input exposure records are collected, interpreted and controlled by health physicists who report to the DOE contractors (in this case to SRP contractors). If DHHS is to supervise epidemiology research, perhaps also it should have about half of the health physicists at each plant (SRP in this case) under its own payroll. 6) In the past SRP management has made claims that defy laws of physics and meteorology. How can we be assured things have changed; top management changes but some of the same group leaders, section chiefs and supervisors still work at SRP?	Please see the response to Comment C-15-01 on radiation protection organizations.
C-15-15	7) Since there has never been an independent study of the cancer risk at SRP and considering Dr. Stewart presumably will shortly have the dose and mortality data from SRP for her analysis, consideration of operation of these reactors should be delayed at least until this analysis is complete.	Please see the response to Comment C-15-04 on epidemiological studies.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-15-16	8) The EIS provides no basic or source data by which one can judge the validity of dose and of health effects. Such data should be provided to independent scientists and engineers before consideration to restart reactors K, L, and P. Perhaps DHHS could conduct an EIS study of the SRP when DR. Stewart completes her epidemiology study. 9) Dose estimates from H-3, Pu-238, Pu-239+240 and C-14 are very critical from the standpoint of health effects to workers at SRP and to persons living in the neighborhood of the plant. These estimates should take into account the new risk estimates of BEIR V, corrections to BEIR V at low doses where the supralinear relationship maintains and consider the major adjustments that have been made to the MPCs of the radionuclides, especially in the case of Pu-238, Pu-239 and H-3.	Please see the response to Comment C-15-03 on input documents used in support of the EIS.

Karl Z. Morgan

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

*Attachment - 1*THE VIEWPOINT AND EXPERIENCE OF A SCIENTIST WHO
HAS BEEN A PLAINTIFFS EXPERT WITNESS IN MANY
RADIATION CASESKarl L. Morgan
1984 Castleway Drive, Atlanta, GA 30345, U.S.A.

Abstract - The U.S. Department of Justice and the nuclear industry are teamed up to insure that plaintiffs who allege radiation injury do not win any more cases in Court. After losing several cases of injury to radiation workers, e.g. the case of Keren Silkwood vs Kier McGee or of Krumbeck vs Dow Chemical, the Justice Department has been giving lectures in several U.S. cities to lawyers and health physicists on how best the Government and industry can work together to prevent losing cases in which they are accused of causing radiation injury. The tactic is to confuse the Judge, the jury and often the plaintiff lawyer with half truths, misleading statements and claims that are contrary to scientific fact. Above all the name of the game is character assassination of the plaintiff witnesses who are so foolish as to try to defend those who consider themselves radiation victims. For example, in the case Johnson vs the U.S., the Judge was convinced that the radiation exposure of the plaintiffs was negligible because whole body counts and autopsies indicated no accumulated body burden of radium. The fact was, however, that the exposures were not to radium but to the noble gas Rn-222, a daughter product of Ra-226. One of the defense witnesses had described RaSO₄ as analogous to calcium or CaSO₄. The Judge described this witness as "highly credible and a most refreshing witness" and went on to say "...if the plaintiffs had received any significant internal dose from alpha particles from inhaled or ingested radium, a substantial portion of the inhaled or ingested radium would have been deposited in their bones and would be there today." Unfortunately the Judge gave no recognition of the scientific fact that the solubility of CaSO₄ is 100,000 times that of RaSO₄. It was little consolation to the plaintiffs that the Judge admitted in his written decision that my testimony for the plaintiffs "may just as well have been reported in Greek." The Judge defended the plaintiff witnesses by stating they were "deceptive, playing with numbers, they are so-called experts, laughing stock," etc while praising the defense witnesses as "superb, entirely persuasive, refreshing, eminent," etc. The Judge finally indicated his true objective when he stated, "The paramount and obvious overriding interest has been to put to rest once and for all the likes of Drs. Goldman, Morgan and Johnson [the plaintiff witnesses]." Does this mean the purpose of allowing this case to be heard was to discourage us and all other potential witnesses from defending persons who may have received radiation injury while employed in government supported operations?

During the early World War II period of rapid advances in this Atomic Age the U.S. Government was almost the sole benefactor and benevolent supporter of experimental research and engineering on atomic energy. Its interest stemmed primarily from our intent on developing, testing and using the atomic bomb as a major element in winning the war. During this period of monopoly by the Government and especially with tight security it was commonly considered to be unpatriotic to suggest that exposure to low levels of ionization radiation could be harmful. The Government feared that such information might slow down and make more costly the development, manufacture and testing of nuclear weapons. Perhaps some compromise of justice to injured parties, e.g. radiation veterans and radiation workers, and deviation from the high principles of democracy were warranted during the struggle of war but unfortunately this did not let up completely after the war. Under the blanket of security and often collusion between the Government and industry we have had a continuation of cover-ups, half truths, false information and mistreatment of people in this country and among natives of the islands of the South Pacific. In many cases our Government knowingly exposed people to large doses of radiation and later, when questioned, it denied this exposure was significant or could be harmful. It also denies that these exposures could have been the cause of

malignancies now showing up 10, 20, and 40 years later. Service men, radiation workers and families who lived in heavy radioactive fallout areas and who have radiation induced malignancies have little chance of getting the Government to accept the blame and provide compensation.

Just recently as a result of declassification of early documents we learned of the secret release of 5,000 curies of I-131 at the Hanford site in December 1949, apparently to test instruments and the type of fallout pattern that could be expected as related to terrain and meteorological conditions. The fallout pattern over parts of the states of Washington, Oregon and Idaho provided the opportunity to evaluate the use of waste fission products as a possible adjunct to chemical warfare. As a point of comparison the current estimate of release of I-131 in the Three Mile Island accident is 16 curies or the Hanford release was over 300 times greater than that at Three Mile Island. This incident at Hanford is only the tip of the iceberg as we glance back over the years and as other pages of history are brought into the light by way of the Freedom of Information Act.

One of the most disturbing of the findings has been information about the use of very large doses of external radiation on cancer patients by hospice scientists under contract with the Pentagon. These

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

unlikely they will bite the hand that feeds them by helping you. Promotions, salary increases, research funds for the professor and his graduate students are in jeopardy if he helps you. The health physicists at the place you worked have all your exposure records and log books, some of which could be incriminating for his organization. He most likely is a witness for the defense and why should he recall those incidents when you were involved in an accident and badly contaminated with plutonium or fission products? He has no incentive to trace down the records he then wishes never existed.

(5) Some of the defense witnesses will stretch the truth and use a variety of tricks to confuse and mislead the Judge and jury.

For example, in the Johnson vs U.S. Government case one of the witnesses compared the body uptake of RaSO_4 with that of CaSO_4 and the Judge was convinced considerable quantities of radium should have been found in the bodies of the plaintiffs when they were given whole body counts. The Judge did not understand that RaSO_4 has a solubility of only 2×10^{-4} while the solubility of CaSO_4 is 0.2 or 100,000 greater than that of RaSO_4 . Therefore, in his final written decision regarding one of the defense witnesses, he stated, "His comparative studies regarding the radium dial painters are highly relevant and persuasive in these cases. His description of radium sulphate as analogous to calcium is most convincing." The Judge did not recall the testimony of Dr. John W. Gofman and myself to the effect that RaSO_4 on these old instrument dials and pointers had been baked in a mixture of ZnSO_4 and plastic so that essentially none of the radium in the RaSO_4 could be dissolved and taken up from the GI tract to be deposited in bone. It had no resemblance to the wet radium paint ingested by the radium dial painters when they tipped their brushes with their lips. This insoluble dust from the dials and pointers of the old instruments passed through the GI tract where its residence time is only about two days and not 50 years were it deposited in the bone. After hours of testimony by the plaintiff witnesses the Judge never understood that essentially all the exposure of three of the cancer victims was not to radium but to its daughter Rn-222 and its daughter products. The fourth victim had cancer of the colon. She had an unusually long clearance time in the colon (48 hours compared with the common value of 24 hours) and since the mass of contents in the colon is much less than for the rest of the GI tract, her colon had received a relatively large dose.

In the Dennis vs G.E. case my calculations indicated Mr. Dennis had received a very large internal dose from the pure beta emitting radio-nuclide pair, Sr-90 + Y-90, but the jury failed to recognize that his film badges did not measure beta radiation. Mr. Dennis died of a rather unusual type of leukemia, Waldenstrom's macroglobulinemia. I thought we had presented a very strong case and might win, but the defense lawyer, Mr. Jose, at the very last of the hearings brought in evidence directly from Dr. Waldenstrom, an

English doctor for whom this cancer is named. Dr. Waldenstrom testified that he doubted this disease is caused by radiation. Unfortunately for the plaintiff I was not present at the time to prompt the plaintiff's lawyer to ask the right questions to show that this doctor, although famous, did not know any health physics and was not qualified to answer this question. Furthermore, there are reports of radiation having caused this disease.

(6) Since funds are always limited for the plaintiff, he/she probably cannot afford to have his/her expert witnesses present during the days when the defense witnesses are testifying so the plaintiff is at the mercy of his/her lawyer knowing enough about health physics, radiobiology, mathematics, etc. to ask the best questions of the defense witnesses. To make matters worse, in a trial before a Judge (i.e. no jury), the probability is almost 100% that the Judge will not have a science or mathematics background and will miss the meaning and significance of some of the most vital information. My testimony in the Johnson vs U.S. case before Judge Kelly, as it turned out, involved a great amount of physics and mathematics and in the written decision of Judge Kelly he stated that much of my testimony might just as well have been in Greek. On what basis can a Judge base his judgment? Is it based on the vast number of defense witnesses anxious for the chance to testify against you? Is it based on their position of political stature in Washington? Or is it based on a display with a Geiger counter? For example, one witness impressed Judge Kelly because Kansas dirt caused the counter to click. Apparently he concluded there can be no danger from radium unless you ingest large amounts as did the radium dial painters when they tipped the radium paint brushes with their lips. In his written decision he stated, "For example, enough radium to make one aircraft instrument dial will be found in approximately every five pickup loads of Kansas dirt." By the same reasoning the Judge might have concluded that arsenic is not harmful unless eaten in large amounts because there are hundreds of pounds of it in some lakes from which big cities derive their drinking water.

(7) Progress on your case may be hampered by inadequate provision of exposure records. When they do arrive it is after long delays and they may be incomplete. For example, there may be no data on beta or neutron exposure, there may be no data on internal dose, log books giving details on radiation accidents may have been "misplaced" and important raw data such as the original film in the film badge may have been destroyed.

(8) Fear of character assassination will be likely to deter some otherwise sympathetic scientist from serving as a plaintiff witness. After Judge Kelly decided that the cancer of the four plaintiffs was not caused by their having worked in a radon atmosphere higher than in some of the most hazardous uranium mines and among thousands of radium bearing instruments, he proceeded in mercilessly jeering and castigating the three principals.

C-617

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

plaintiff witnesses -- Drs. John W. Gorman, Carl J. Johnson and myself. He was completely oblivious to our years of research, hundreds of scientific publications and awards for outstanding achievements. For example, Dr. Gorman was a co-discoverer (along with Dr. Glen T. Seaborg) of U-233 and its large cross section for thermal neutron fission. Thus U-233 produced from Th-232 may some day be one of the world's principal sources of energy. Dr. Johnson has conducted a number of noteworthy epidemiological studies. One of these has shown the hazards in the Rocky Flats Area near Denver, Colorado due to Pu-239 and Pu-240 that escaped from a weapons plant nearby. My 34 years in cosmic ray and health physics research have had a few highlights which I doubt even Judge Kelly will be able to expunge. He accused us of being unprofessional, doing things that are scientifically dishonest and indicated I would be the "immediate laughing stock" outside his court. After glorifying the defense witnesses with an abundance of praises and flattering adjectives and a profusion of most uncomplimentary remarks about us, Judge Kelly finally played his hand when he stated in his written decision, "The paramount and obvious overriding interest has been to put to rest once and for all the likes of Drs. Gorman, Morgan and Johnson." He gave me the special compliment, "He is, in the Court's view, a pathetic figure who can better serve the field by simply going home." I can only hope the Judge has done all of us a favor by highlighting the need to reform our Court system. My answer to Judge Kelly is, let's wait and see what percent of employees in this and other similar plants will die of cancer. Can these instrument refurbishing plants be considered a safe place to work even though the one in this case was visited by an inspector from the Occupational Safety and Health Administration (OSHA)? He reported open barrels of radium bearing dials and pointers, levels in the working area of over 100 mr/hr (i.e. over 10,000 times normal) and objects (such as coffee cups) reading above 2,000,000 counts per minute. There were decades of plant operation without a single radiation detection instrument, with no personnel monitoring and no health physics program. In recent years the plant assigned an employee the title of radiation safety officer. He sent out a notice to the employees stating, "Radium is only a health hazard if it is eaten and for this reason we have never suggested that you eat any old dial parts." He reported to the plant manager that he did not post danger signs in areas where the State inspector had required them "because of already sensitive employee relations." Maybe 50 years from now when most of these employees have died, an epidemiological study can be made of these populations and prove whether it is worthwhile to have a health physics program in such places of employment. Let us hope, as would be the case today, such a study will not be under the support of the Department of Energy because I do not believe

it wise to ask the fox to call the rule in the chicken coup.
(2) Finally, I mention another barrier to finding an expert witness or a discouragement to anyone who might be motivated to be a whistle blower. In the Congressional hearings it was indicated that Karen Silkwood was killed under some very suspicious circumstances. A very similar "accident" occurred to Dr. Rowlie Bastedo who was on her way to what some would call an antinuclear meeting. Fortunately she survived. The case of the woman killed in her car when reportedly she was on her way to some whistle blowing about radiation working conditions with TVA, is still under investigation.

In conclusion, I hope things improve during the next Administration. If they don't, I propose we change the motto on our one dollar bill to be correct and read, "In the dollar we trust."

NOTE

Dr. Morgan has been working with ionizing radiation for over 50 years. He was one of the first five health physicist (they were Drs. F. O. Weller, H. M. Parker, C. C. Gamertfelder, J. C. Hart and R. Z. Morgan). He was the first president of both the Health Physics Society and the International Radiation Protection Association (presently about 20,000 members). He was Director of the Health Physics Division of Oak Ridge National Laboratory for 29 years (1943-1972) and a professor in the School of Nuclear Engineering and Health Physics of Georgia Institute of Technology the following nine years. Recently as a consultant on Radiation Protection he has testified in approximately 60 cases on behalf of persons who have reason to believe their cancers were caused by exposure to ionizing radiation and thus are seeking compensation in the Courts.

This paper is based on a presentation on September 29, 1988 before the American Public Health Association Meeting in Las Vegas, Nevada, USA.

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

Attachment - 2

Radiation and Health
 Edited by R. Russell Jones and R. Southwood
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11

ICRP Risk Estimates—An Alternative View

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ABSTRACT

For 38 years ICRP has served as the international source of information on risks of exposure to ionizing radiation and has provided recommendations for radiation protection. In general its publications have served a very useful purpose of reducing unnecessary radiation exposure but in some respects ICRP has delayed action to reduce excessive exposure, has underestimated radiation risks and has recommended radiation exposure levels that are much too high. For decades it showed concern to reduce exposure of doctors and nurses but ignored the principal source of population exposure, namely, patient exposure. Beginning in 1960 we became aware of two serious radiation exposure problems (occupational exposure in uranium mines and population exposure from testing of nuclear weapons). One might have expected ICRP to be the first to try to reduce these exposures but it was conspicuous by its silence. In 1958 ICRP set limits of exposure for radiation workers and members of the public. Nineteen years later (1977) when it was realized that the risk of radiation induced cancer was ten to thirty times what it was perceived to be in 1958, ICRP might have been expected to recommend a major reduction in permissible exposure levels, but to the dismay of some of us, it increased them. It was also a great disappointment when in 1977, levels of MPC or radionuclides in air, water and food were increased for a large fraction of the more dangerous radionuclides. The reactor accident at Chernobyl calls for a number of new ICRP recommendations. When can we expect them?

The International Commission on Radiological Protection, ICRP, has been in existence for almost 60 years, beginning under the name, International X-ray and Radium Protection Committee (IXRPC) in 1928 when it was formed as

176

RADIATION AND HEALTH

a committee of the Second International Congress of Radiology, ICR¹. This Committee operated with seven members for nine years until 1937 and during this period formulated recommendations on protection from ionizing radiation that were based on earlier recommendations published by the British X-ray and Radium Protection Committee in 1921. During this period a principal concern was protection of the radiologist and his staff. The International X-ray and Radium Protection Committee of the ICR ceased to function during the Second World War years, 1937-1950, and was reorganized with new members and in most respects as a new organization with the name, International Commission on Radiological Protection, ICRP, in 1950.

During the latter part of the doldrum period of IXRPC, 1943 to 1950, there were many publications dealing with protection from ionizing radiation by health physicists and radiobiologists working on the nuclear weapons programmes at Harwell, England, Chalk River, Canada and the US National Laboratories but most of these were in-house classified reports until a few years after the war ended. A large fraction of the members of the ICRP Main Commission and its Committees in the revival period of ICRP (1950-1960) were associated with these laboratories and were joined on the ICRP by field doctors from these and other countries.

Through the years the ICRP has served as the principal source of information on risks of exposure to ionizing radiation and since 1960 has provided extensive recommendations that have been of assistance to the countries of the world in setting their radiation protection standards, rules and regulations. Some countries have accepted the ICRP recommendations without question as though they were Gospel truth or infallible. Perhaps in most cases they were wise in this reliance, but in some respects I believe ICRP has not met their expectations or invited unqualified acceptance of its recommendations. For this reason I believe it might be helpful to look at what we might consider have been some of the shortcomings of the ICRP, and call attention in a constructive vein to some cases where it was at fault for ignoring radiation exposure problems and to others where it made bad recommendations. Others on this programme are scheduled to provide balance to this topic by enumerating some of the successful accomplishments of ICRP so I leave this discussion to them. Some of the early mistakes of ICRP were reflections of the misconceptions of the science of the times and the fault of ICRP was that perhaps it should have been a bit more ahead of its time. The early publications of the International X-ray and Radium Protection Committee¹ were in various journals, mostly the *British Journal of Radiology*. The ICRP now has in preparation its fifth handbook; the first of these, ICRP-1, was published in 1959.

ICRP's greatest mistake in the early period resulted from the false belief of many of its members that low-level exposure is harmless and to many the group sincerely have committed a safe dose well below the threshold at which any

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

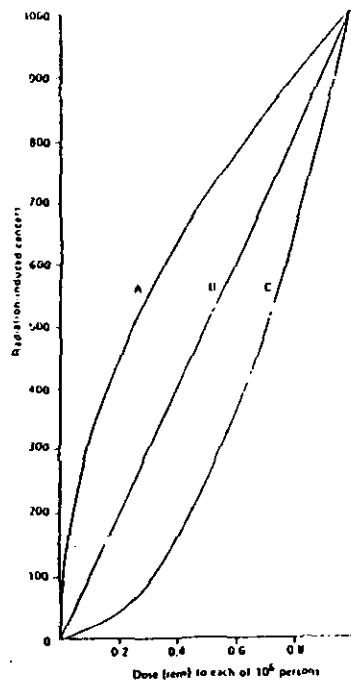
Response

ICRP RISK ESTIMATES - AN ALTERNATIVE VIEW

127

US

RADIATION AND DEATH

Figure 1 Plot of equation $C = aND^n$

C = cancer deaths from dose D
 D = dose (rem) to each person
 N = number of persons = 10^6 in this case
 a = fatal cancers/person rem
 $n = 1$ for linear hypothesis, Curve B
 $n > 1$ for threshold hypothesis
 $n = 2$ in Curve C
 $n < 1$ for supralinear hypothesis
 $n = \frac{1}{2}$ in Curve A

harm would ever result. During the years that followed animals and human studies indicated this to be a bad assumption and so the threshold hypothesis was discarded in favour of the linear hypothesis although some of the ICRP publications left the reader with the impression this certainly was a most conservative assumption that without doubt greatly overestimated the risk. Today ICRP is at another crossroad pointing clearly in the direction of the supra-linear hypothesis, which not only disclaims a safety factor associated with the application of the linear hypothesis, but asserts that it under-estimates the cancer risk. The three hypotheses can be expressed in a simplified form by the equation, $C = aD^n$, in which C is the radiation-induced cancer incidence or mortality, a is a constant referred to as the cancer coefficient and D is the dose in rems. If n is greater than 1, we have the threshold hypothesis, if it is equal to 1, we have the linear hypothesis and if it is less than 1, we have the *supralinear hypothesis*. In many cases of cancer induction, $n \approx \frac{1}{2}$ or the cancer risk increases with the square root of the dose so that more cancers are produced at low doses than at high dose. Figure 1 illustrates the three hypotheses. Although the ICRP and other agencies frequently are forced to mention results of epidemiological studies where the cancer risk versus the dose of ionizing radiation conforms best with the supralinear theory, they seem to do so reluctantly implying that something most certainly is wrong with such data. For example, the US General Accounting Office¹ formed an expert committee to evaluate the risks of low-level exposure and it concluded, after examining studies of cancer incidence among patients with ankylosing spondylitis who had developed cancer following x-ray medical treatments, that

Both mixed models tested did much better than the linear model and the unusual square root-cubic model did the best of all. Since the cubic term is negligible at low doses, this last model has a lower than linear gradient but remains risk-free at low doses of X-rays.

The ICRP, UNSCEAR, BEIR-III and other groups are quick to devalue or criticize studies which lend support to the supralinear hypothesis such as the *in utero* studies of Alice Stewart, the tinea capitis studies of B. Modan *et al.*, or the Hanford radiation worker study of T. F. Mancuso, A. Stewart and G. Knave, but they wait for years until they are forced to acknowledge the more obvious and serious flaws in their inspired, irrefutable hallmark, the study of survivors of the atomic bombing of Hiroshima and Nagasaki. They invent all sorts of explanations as to why the former studies are not reliable or admissible in determining a , the cancer coefficient (a = cancer deaths per person rem) but fail to recognize the shortcomings of the Japanese study. Some reasons why the study of survivors of bombings of Hiroshima and Nagasaki underestimate cancer risk are:

(1) The total dose estimates were too high, thus a was underestimated.

C-620

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

ICRP RISK ESTIMATES: AN ALTERNATIVE VIEW

129

- (2) The neutron dose, especially at Hiroshima, was lower than estimated, thus σ was underestimated.
- (3) Some evaluations use the low dose group as controls. On the supra-linear hypothesis this could greatly underestimate σ .
- (4) It was not a normal population.¹ The bomb survivors had been exposed to fire, blast, deprivation, psychological damage and severe damage to their immune systems so the weaker persons with less resilience died of a variety of common diseases. On the other hand, those of superior stamina or the 'healthy survivors' had a lower than normal death rate five years after the bombing when the epidemiological studies got underway. Thus, as explained by A. M. Stewart,² the two effects tended to neutralize each other and when the survivor study began, the death rate appeared normal except for cancer but the population most certainly was far from normal. Thus the cancer incidence was suppressed.
- (5) There still is an above normal cancer rate among the survivors and this will continue to increase the value of σ .

In spite of very limited knowledge about the long term hazards of exposure to low levels of ionizing radiation in the early period (1950-60), I believe in many respects the relative level of excellence as measured by the quality of performance of the Main Commission of ICRP was higher than since then, especially if one takes into account the fact that during this early post war period ICRP was a pioneer breaking new ground. Certainly much of this credit or blame depends on the stature of the thirteen members comprising the Main Commission of ICRP. I believe it would be difficult to contemplate finding men of less bias and higher qualifications, for example, than Sir Ernest Rock Carling, W. Hinks and M. V. Mayneord of the UK, A. J. Cipriani of Canada, R. M. Sievert of Sweden, and G. Failla and H. J. Muller of the US.

Perhaps one of the greatest weaknesses of ICRP stems from its process of nominating and electing members to the Main Commission; however, I must be quick to say it is difficult to think of a perfect solution. The nomination and election processes are flawed because they invite bias and appointment of members who have a conflict of interest and tempt some to make this a lifetime profession assuring them wide political recognition as an authority on radiation protection. In the first place, ICRP functions under the auspices of the International Congress of Radiology, ICR. Possible conflict comes here from the fact that ICRP is set up supposedly to reduce non-beneficial radiation exposure, yet the greater the number of radiation diagnostic procedures and the more routine and assembly-line style in which medical X-rays are administered, the greater the demand for radiology. In many cases this leads to X-rays that are not necessary³ and to administrative rather than medical requirements for X-rays. On the other hand, when ICRP began in 1928, radiologists comprised the segment of the population with the largest exposure

130

RADIATION AND HEALTH

to ionizing radiation and the greatest number with reported radiation injuries. They knew more about its uses, its measurement and its control than any other group. More importantly, the ICR was the first and only international professional organization sufficiently concerned to form such a protection committee and finance its operation. Some of the national society affiliates that comprise the ICR, however, have done more to increase unnecessary patient exposure to X-rays than to minimize it. For example, some of us worked for many years to do away with the mass chest X-ray programme in the schools in the US but we only got negative support of our national radiological societies or the ICR. In this programme buses with photo-fluorometric X-ray equipment would pull up to a school each year and the children were marched through to have a chest X-ray. It would have been better had they instead been branded with a sizzling Texas branding iron because measurements made by my group at Oak Ridge National Laboratory of a number of these devices in use indicated surface doses per X-ray ranging between 2690 and 3000 mR while the average chest X-ray dose at my facility (Oak Ridge National Laboratory) was only 15 mR. Finally, years after the US Surgeon General repeatedly urged a discontinuance of these programmes and after he indicated they had not been hiding cases of TB, these programmes were done away with in the US.

Another example of the low priority the American radiological societies and the American College of Radiology, ACR, have given to radiation protection is their reluctance to endorse and failure to make use of the Ten-Day-Rule. This ICRP Rule stated that diagnostic X-rays to the pelvic and abdominal region of women in the child-bearing age should be delayed in most cases and even during the 10-day interval following the beginning of menstruation unless such delay would be harmful to the woman. Dr Muller and I had worked long and hard for ICRP to adopt this Rule and we were delighted when it was adopted by ICRP at the 1962 London meeting. Our delight, however, was short-lived and somewhat impaired when we returned to the US and read in the Bulletin of the ACR that this was a bad Rule and it had been unsuccessfully opposed by two of the members of ICRP, L. S. Taylor and R. S. Stone. It is true this Rule adds to the complexities of operating a radiology department like a factory assembly line and means rescheduling of many X-rays but I believe the unborn child deserves this extra inconvenience and consideration. I have been very disappointed in recent years that ICRP has weakened its stand on the Ten-Day-Rule.

ICRP has not taken full advantage of the findings of Alice Stewart and G. Kneale⁴ in their Oxford Studies of *in utero* exposure. It is not to ICRP credit that the permissible likely occupational exposure of pregnant women was decreased from the 1962 value of 1866 mrem⁵ only to 1708 mrem⁶ in 1977.^{*} I believe this 1708 mrem is far too high. This would correspond to about six

^{*}In 1962 ICRP 6 permitted exposure of 1300 mrem in 13 weeks of an average of 300 mrem in

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

ICRP RISK ESTIMATES: AN ALTERNATIVE VIEW

111

of the typical pelvimetries delivered during the period of the Oxford Study⁴ and ten times the normal risk that the child will die of cancer in early childhood. It is probably true very few mothers would be so calloused as to willingly allow this likely occupational exposure of 1708 mrem to their unborn children but many radiation workers are not aware of the serious warning given us by the Stewart data and certainly many nuclear industries would just as soon this information were not publicized. Even worse, there is nothing in the ICRP recommendations to deter the nuclear industry from allowing the young woman to receive the full 5000 mrem during the two months before pregnancy is recognized (i.e. three times the above risk estimates).

One of the weaknesses of ICRP is in their rules of turnover of membership on the thirteen member ICRP Main Commission. The rules specify not less than two or more than four members shall be changed at each meeting of ICRP (every three years) and there is no restriction regarding one's tenure on the Main Commission. Sixty of members have been on the Commission more than twenty years and the average turnover has been 3.7 members every three years. I believe it would be a big improvement to change the rules to require a turnover of not less than four or more than five every three years and have a maximum tenure of nine years. Selection of new members is made every three years by the thirteen member Main Commission from nominations submitted to it by National Delegations to the ICR and by the thirteen member Main Commission members themselves. This has resulted in a self-perpetuated body. I am confident there are several ways in which this election process could be improved. The ICRP has a number of active committees which it appoints from time to time and these usually comprise fifty or more persons in addition to the thirteen members on the Main Commission. Perhaps they too should submit nominations for the Main Commission membership and they, plus the thirteen members of the Main Commission, could vote every three years on the membership. Only Committee members on committees that have been active during the three-year period should have a vote. I am sure such a change would not solve all the membership problems but I believe it would place more qualified persons on the Main Commission to respond to needed or current projects of the Commission. It would more likely result in having certain disciplines properly represented. It would bring in highly qualified scientists from countries seldom, if ever, represented and hopefully it would lessen the chance of special interest groups such as from radiology or the nuclear energy industry having excessive influence. It might lessen the number who have a conflict of interest in reference to current projects of the ICRP or bring to the

first two months of pregnancy and 1000 mrem in the last seven months or a total of 1666 mrem. In 1977 ICRP-26 permits exposure of 5000 mrem in a year or 50 mrem in any two consecutive months and exposure at the rate of 0.15 mrem/yr for the last seven months or a total of 633 + 875 = 1508 mrem. Both ICRP-6 and ICRP-26 do not actually prohibit the woman receiving exposure of 5000 mrem during the first two months of pregnancy.

RADIATION AND HEALTH

112

top of the agenda new areas where ICRP should operate. I believe there have been two groups excessively represented on the Main Commission of ICRP that have a strong interest in depreciating the harmful effects of low exposure to ionizing radiation. These are persons wishing no restrictions on dose from excessive use of diagnostic X-rays and those with the nuclear establishment (employees of National Laboratories and, with industry and government agencies, responsible for promoting the development of nuclear weapons or supporting nuclear power). These groups need representation but I would like to see them counterbalanced by persons such as, for example, Drs Alice Stewart, J. Rotblat, B. Modan and Frank von Hippel, just to name a few of many who are well qualified.

I believe since ICRP has been considered by many as the most reliable and the ultimate authority on radiation protection for sixty years, its failure to address and try to correct a situation of high, unnecessary radiation exposure must be considered a public overservice. I will mention a few of these faults of omission in the following as typical examples:

- (1) In the first period of operation of ICRP, X-ray technologists were instructed in their training classes and in their textbooks^{5,6} to give larger X-ray doses to black people. The General Electric Company's X-ray department recommended in their technique charts for X-ray technologists that they give higher doses to blacks and the textbook, *X-Ray Technology*, by C. A. Jacobs and D. E. Hagen recommended doses to blacks that were higher by 40 to 60 per cent. Why did ICRP remain silent?
- (2) The excessive doses delivered in the mass chest X-ray programs—millions of children went on for many years. The dose per X-ray could have been reduced by a factor of 200 by the use of better equipment but dollars were more important than children's lives. Why was ICRP silent on this issue?
- (3) During the period of 1960-65 there were many papers published indicating the serious risk of lung cancer among underground uranium miners in the Colorado Plateau region of the US. There were several US Congressional hearings in which many scientists testified—some for reducing the maximum permissible working level in the mines while others urged the level not be reduced. It was no surprise that the US Atomic Energy Commission (USAEC) opposed any reduction in the permissible working level (WL) but I was disappointed that the US Public Health Service and the US Federal Radiation Council (USFRC) joined with the USAEC in opposing any reduction. Table 1¹¹ indicates the number of men employed in uranium mining in 1950-59 and the high percentage of underground mines operating at very high working levels in 1956-9. Note that for these years only 18 to 28 per cent were operating

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

ICRP RISK ESTIMATES--AN ALTERNATIVE VIEW

133

Table I

Estimates of the number of mines producing uranium ore during the calendar year as reported by the industry to the US Bureau of Mines (1954-64) and AEC (1965-66)*

Year	Underground mines	Open pit mines
1954	450	50
1955	600	75
1956	700	100
1957	850	125
1958	850	200
1959	801	165
1960	703	166
1961	497	122
1962	545	139
1963	573	162
1964	471	106
1965	562	73
1966	533	85

Number of men employed in uranium mines*

Year	Underground ^b mines	Open pit mines
1954	916	53
1955	1376	293
1956	1770	584
1957	2430	574
1958	2796	1175
1959	3996	1259
1960	4908	1499
1961	4182	1047
1962	4174	1074
1963	3510	886
1964	1219	726
1965	2900	700
1966	2545	359

Estimated distribution of mines by Working Level ranges from 1956 to 1959

Year	Number mines measured	< 1.0 WL (%)	1.0-2.9 WL (%)	3.0-10.0 WL (%)	> 10.0 WL (%)	Total (%)
1956	108	19	25	33	23	100
1957	158	20	26	28	26	100
1958	53	28	21	36	15	100
1959	237	18	26	28	28	100

*Published by the US Federal Radiation Council as report on, *Guidance for Control of Radiation Hazards in Uranium Mining*, Report No. 8 (revised), Sept. 1967.

^bIncludes above-ground employees who may occasionally go underground

at a level less than 1 WL ($\sim 10^{-7}$ $\mu\text{Ci/cc}$ of Rn-222) while ICRP-2 handbook (1959) gave 3×10^{-8} $\mu\text{Ci/cc}$ (~ 0.3 WL) as the maximum permissible concentration (MPC) for Rn-222. Figure 2¹¹ indicates how the cancer risk increased with working level months (WLM). Fortunately after all this discouragement an honest government official turned up in Washington, Secretary of Labor, Mr. Wirtz, and he unilaterally set the level at 0.3 WL or $0.3 \times 12 = 4$ WLM (working level months per year). But where was ICRP all this time? It was not until 1977 that ICRP-24,

RADIATION AND HEALTH

134

*Radiation Protection in Uranium and Other Mines*¹² was published. Surely it should not have taken twenty years for ICRP to decide this was a very serious radiation problem and come to our assistance? One might have expected this to be one of ICRP's first handbooks, warning of the risks of Rn-222 and its daughter products in underground mines. This

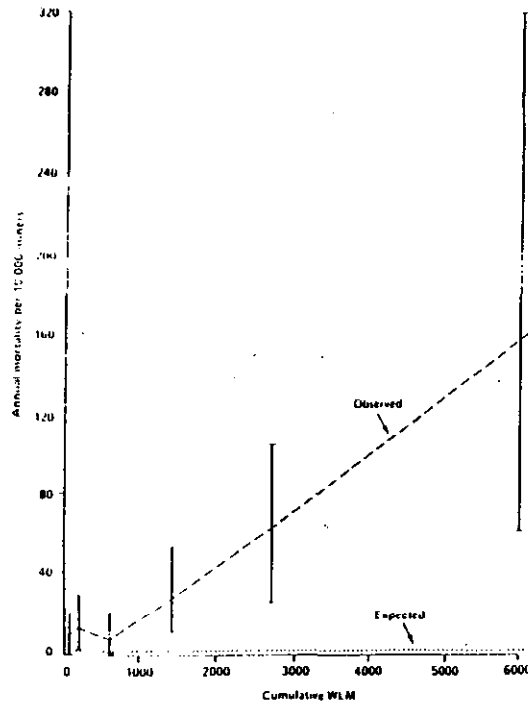


Figure 2. Observed and expected annual lung cancer mortality per 10,000 miners and 95 per cent confidence limits in relation to exposure. (From report of the US Federal Radiation Council titled, *Guidance for the Control of Radiation Hazards in Uranium Mining*, No. 8 (revised), Sept. 1967)

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

ICRP RISK ESTIMATES - AN ALTERNATIVE VIEW

135

hazard had first been recognized over 500 years ago when miners in the Schneeberg cobalt mines of Saxony and the Joachimsthal pitchblende miners of Bohemia were dying of a miners' disease, now known as radiation-induced cancer. It is good to have ICRP come in and give support years after a battle is won but it would have been so helpful to have its support to expedite and help the battle earlier.

- (1) In the discussion above it was mentioned that ICRP operating under support of the ICR showed great interest in preventing excessive occupational exposure to the radiologists and their staff but dragged its feet in publishing the first comprehensive reports on protection of the patient.

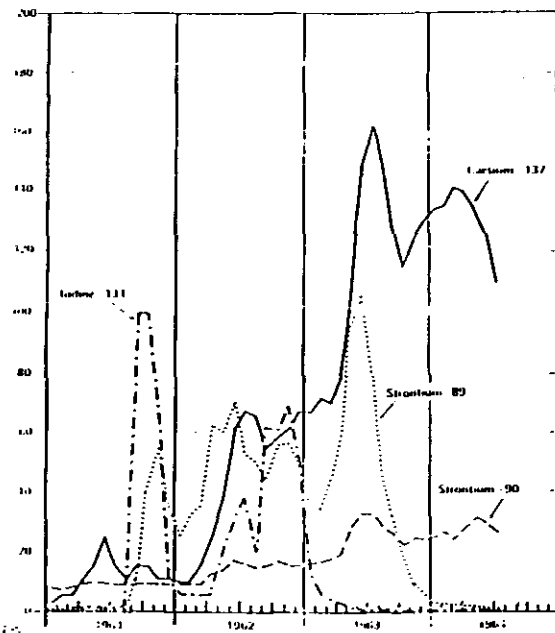


Figure 1. Average concentration of radionuclides in milk samples from Public Health Service pasteurized milk network.

RADIATION AND HEALTH

136

These reports finally appeared in 1970¹⁴ and 1982¹⁵ which were 42 and 54 years, respectively, after ICRP began. These are very useful handbooks but far more is needed on this subject.

- (5) One of the most frustrating experiences many of us faced over a period of years was the large dose delivered both locally and world wide during atmospheric testing of nuclear weapons. Figure 3 indicates the seriousness of this problem in the U.S. as attested by fallout levels of I-131, Cs-137, Sr-90 and Sr-89 in the pasteurized milk samples collected from 100 sampling stations in the US Public Health Service Network program¹⁶ and Table 2¹⁴ indicates the estimated dose in the 'wet' areas of the US. If one assumes there were 150 million people in the wet areas receiving the whole-body dose of 140 mrem over 70 years and that three quarters of this dose is effective, this corresponds to ~15,000 cancer deaths when using a cancer dose coefficient of $a = 10^{-5}$ cancer deaths per rem ($a = 0.130 \times 10^{-5} \times 10^6 \times 34 \times 10^{-3} = 1.625$). Those conducting these tests tried to make the problem seem small, first by using a cancer coefficient a that was too small by an order of magnitude, i.e. $a = 10^{-6}$, by comparing the a with that from natural background.

Table 2. Estimated radiation 70-year dose commitment in the wet areas of the United States from nuclear weapon tests in 1962 and from all testing through 1962¹⁴

Tissue or organ	70-year dose commitment from tests through 1962 ¹⁴ (mrem)	70-year dose commitment from all testing through 1962 (mrem)
Whole body and reproductive cells		
Cesium-137 external	10	
Cesium-137 internal	10	
Short-lived nuclides	18	
Carbon-14	18	
Total	56	130
Bone		
Strontium-90	150	
Strontium-89	19	
Whole body	56	
Total	215	465
Bone marrow		
Strontium-90	60	
Strontium-89	13	
Whole body	56	
Total	129	215

¹⁴Values given in Figure 3, *Estimate and Evaluation of Radiation in the United States from Nuclear Weapons Testing Conducted through 1962*, Federal Radiation Council, Report No. 4, May 1963.

C-624

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

RISK ESTIMATES--AN ALTERNATIVE VIEW

137

i.e. 100 million per year, and by comparisons with the natural cancer death rate of 20 per cent. In other words, 15 000 cancers on top of 30 million was considered 'negligible'. To me this is absurd. It is like telling a mother whose child is dying of radiation induced cancer not to worry because 10 million other people in the wet area of the US will die naturally of cancer.

When a nation or an industry decides to go ahead with a programme that costs lives, I consider it has reached a conclusion on the value of a human life. Some years ago our Nuclear Regulatory Commission, NRC, made this decision when it set the value of a rem at \$1000, i.e. industry was justified in spending \$1000 to prevent one person-rem. If $\sigma = 10^{-5}$ cancer deaths per rem, this corresponds to $\$1000 \div 10^{-5} =$ a million dollars per life. Others have set the value of a life much lower. For example, two members of the ICRP Main Commission, Mr H. J. Duster¹⁷ and Dr A. S. McLean (Dr A. S. McLean was a member of the Main Commission of ICRP from 1973 to 1977 and Mr H. J. Duster has been a member since 1977), published the value of 10 to 25 dollars per man-rem or \$10 000 to \$25 000 per life.

If the world would make annual whole-body dose commitment from gamma fallout is about 5 mrem per year¹⁸ to the year 2000. This will cause a projected 750 000 cancer deaths (5×10^{-5} rem $\times 10^{-5}$ / person rem $\times 5 \times 10^9$ persons $\times 50$ effective lifespan of 40 y = 750 000 cancer deaths from 1960 to the year 2000). Again I consider this very significant even though it is only 0.05 per cent of the total cancer deaths in the world population. The fact that other agencies such as the United Nations Scientific Committee on Atomic Radiation (UNSCEAR) addressed the fallow question in no way obviates the obligation of ICRP, the recognized world authority on effects of radiation on man, from letting its voice be heard by taking up this issue and doing what it can to stop the deaths of 750 000 people. I regret ICRP was silent on this issue.

As I view it, the question of whether an organization like ICRP should set a higher value on a human life or whether it should go against the politically expedient stream, stick its neck out and ask for trouble by trying to put a stop to testing of nuclear weapons in the atmosphere is one of morality. Now an even greater question stands out. Should ICRP, like Physicians for Social Responsibility or the International Physicians for Prevention of Nuclear War, join the battle and help prevent the horrible suffering following World War III in considerable measure due to mass radiation of the world population? Perhaps this question will be answered with the word NO or in the typical way governments or agencies resolve issues. I quote from a letter uncovered via the US Freedom of Information Act. It was from Dr P. C. Tompkins, then Executive Director of the US Federal Radiation Council to Dr Haworth, Chairman of the US Atomic Energy Commission, dated 25 September 1962. It states in

US

RADIATION AND HEALTH

PART

If any reasonable agreement on this subject can be reached among Agencies, the basic approach to the report would be to start with a simple, straightforward statement of conclusions. It would then be a straightforward matter to select the key scientific consultants whose opinions should be sought in order to substantiate the validity of the conclusions or recommended appropriate modifications.

I hope ICRP will not operate like Government Agencies? I do believe, however, this was the basis on which the US Atomic Energy Commission decided the so-called particle problem (high dose near a small radioactive particle) was not a problem. I was never satisfied that the decision makers took proper account of studies such as those of H. Eisen *et al.*¹⁹ where they observed a high incidence of cancer at the sites of injection of Pu-239 and other radionuclides under the skin of animals.

- (6) An ICRP report on major radiation accidents, problems encountered and in what manner they were handled is long overdue. In 1984 ICRP published²⁰ a report on major radiation accidents, but it is very brief, superficial and fails to address the numerous questions that have been experienced in major radiation accidents in many places. There have been four fatal criticality accidents in the US (Los Alamos, NM on 21 August 1945, 21 May 1946 and 30 Dec. 1958 and Wood River Junction, RI on 24 July 1964) and the SL-1 Reactor explosion at Idaho Falls, ID, 3 January 1961. One person was killed in each of the four criticality accidents and three were killed in the SL-1 accident. Only this SL-1 accident resulted in environmental contamination but because of its isolation in a desert environment, contamination beyond the plant-site and into the public domain was minimal. There were several bad accidents at the Rocky Flats Plant²¹ not far from Denver, CO and these resulted in widespread environmental contamination from Pu-239. Recently information was uncovered indicating that on 2 December 1949, 5500 Ci of I-131 were released at the Hanford, WA plant to test meteorological patterns and adequacy of instruments in case fission products were used as an adjunct to chemical warfare. Also there had been hundreds of thousands of Curies released into the air and into the Columbia River during operations of the plant in weapons production during the war. The Savannah River, SC plant²² had a number of releases of radioactive material into the environment. All of these accidents could provide a wealth of useful information on what to do and not to do and this information is just waiting for an organization like ICRP to bring it together. There have been also many non fatal criticality accidents like the one at Y-12 in Oak Ridge, TN on 16 June 1955 in which five workers

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	RISK ESTIMATES: AN ALTERNATIVE VIEW 119 got over 200 rem doses and there was the mild explosion at Mol, Belgium on 10 December 1965 where a worker received 550 rem. The Vneca, Yugoslavia accident on 15 October 1958 resulted in four persons receiving over 400 rem and one of these died after 32 days. I consider it a shame that much valuable information about these accidents has not been brought together and put into print. At present it only lingers in the minds of a few persons still living. So far as I know until Chernobyl there had been only three major reactor accidents (SL-1 reactor, 3 January 1961, Windscale reactor No. 1 on 8 October 1957 and Three Mile Island Reactor no. 2 on 28 March 1979). There was a massive explosion^{24,25} apparently in improperly buried nuclear waste in the Ural Mountains in 1957, but I have only fragmentary information on this. Possibly the Russian members on the ICRP Commission could provide details of this accident for this long awaited ICRP handbook. Some of the information I have in mind could have been of assistance at the time of the Chernobyl accident. In the following I list a few personal experiences that suggest the kind of information that should be given in this ICRP handbook that ought to have been written many years ago. They are as follows:	
	140 RADIATION AND HEALTH down the buildings and roads with water. This is opposite of what I would recommend except for contamination by short lived radionuclides. (c) In the Y-12 accident mentioned above I had all sorts of meters as I entered this building and homed-in on the criticality assembly with my operating instruments in hand but I failed to have with me a much needed instrument—a simple flashlight to see and to read the meters—for the electricity was now cut off in this labyrinth of a windowless building. In major accidents, important but simple things often are lacking. For example, gasoline pumps may not operate because the electrical power is knocked out. After the Y-12 accident I had the plant doctor collect 5 cc of blood from each of the highly exposed persons, mix it with heparin to prevent coagulation, and we measured the P-32 and Na-24 in the blood to determine the fast and thermal neutron dose (i.e. ^{32}P and ^{24}Na). Differential blood counts were made from time to time and studies of chromosomal aberrations were carried out. (d) When I visited Windscale a couple of days after the accident, I was told of two major problems: (1) they did not get their light aircraft airborne for aerial surveys soon enough and (2) utter confusion at times could have been avoided if they had had a well equipped communication centre ready and waiting for them at the time of the accident. Neither of these two things were available at the Three Mile Accident or the Chernobyl accident. Maybe if ICRP will prepare this handbook on accidents, emergency personnel will be better prepared for the next major reactor accident? (e) Perhaps ICRP in this proposed handbook could even put in on how to put out a fire in graphite, uranium or zirconium? We had a fire at the back of our graphite reactor at Oak Ridge National Laboratory about the time we had a visit from Sir John Cockcroft in the late 1950s and he was impressed with the necessity of filters in the cooling air from a reactor before the cloud of dust and smoke went up the stack. But alas when he returned to the UK, the Windscale stack was already half built. But nothing could stop a great scientist. An immense filter house was built halfway up the stack. This became known as "Cockcroft's folly" but it partly saved the day during the graphite fire at Windscale on 8 October 1957. Early at Oak Ridge and at Windscale and recently at Chernobyl water was used with much trepidation to extinguish the fires but it put them out. However, at Chernobyl the water probably reacted with the hot metals and graphite to produce large amounts of hydrogen. While I was at Windscale during the time of the accident early in October 1957, I was puzzled that even though the filters near the top of the stack were saturated with water, they had held up most of the Sr-90 and Cs-90, Cs-134 and Cs-137 and the I-131, I-132, I-133, I-134, and I-135. How could this be? Then I was told that dense fumes from Bi-209 which was	
C-626	(a) At the SL-1 accident the men who ran up the stairs of the reactor building on a rescue attempt were in a thick cloud of dust and in radiation field of hundreds of rem/h. They certainly received very large doses to the nasopharyngeal and tracheobronchial regions of the lungs and to the gastrointestinal tract from the inhalation of large dust particles. It is unfortunate that faecal as well as urine blood and sputum samples were not collected and analysed after this exposure. The autopsy data on the three bodies (of those caught in the blast and eventually recovered from the debris in the reactor building) provided extremely useful information on the nature and cause of the accident. (b) Following the explosion of the chemical process tank at Oak Ridge National Laboratory in 1965, it was very important that we approach the scene of the accident with operating neutron dose meters in hand. Although not known at the time, it turned out later there was enough plutonium in this tank for many critical assemblies. At any moment the liquid could have settled into a critical configuration. In this same explosion a large amount of plutonium was blown out over an adjacent building and onto a road. Within four hours after the accident we had tarred the road and sprayed the adjacent building with paint. Later the road was taken up piece-by-piece, placed in plastic containers and sent to the official burial ground. The building later was disassembled piece by piece, placed in burial containers and properly buried. I have seen pictures from Chernobyl where they are washing	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
ICRP RISK ESTIMATES--AN ALTERNATIVE VIEW 141 stored in the burning part of the reactor had acted as condensation nuclei and made even water saturated filters relatively efficient. I knew of course that the Bi-209 was in the reactor to produce Po-210 for the neutron trigger then used in our atomic bombs,* so I kept this a dark secret in my mind until a few years ago when information was declassified and released that Po-210 was one of the Windscale fallout products in 1957. Incidentally, about ten years ago Dr A. Stewart and I had just given lectures at a meeting in London and in the question period H. J. Dunster (now a member of ICRP) criticized Dr Stewart for having said an alpha-emitter was discharged with the fission products. In the discussion I tried in a weak way to come to Dr Stewart's rescue, but my lips were sealed because of security. Po-210, an alpha-emitter, was discharged along with the beta- and gamma-emitting fission products during the Windscale accident. (7) One subject which I believe should be carefully followed by ICRP and on which it could make very useful recommendations, for example, is that of the person rem per year at the various nuclear plants. This should be addressed both in terms of person rem per year per plant and person rem per year per 1000 MWe. It is astonishing to note that some nuclear power facilities consistently have a better record than others in this regard by more than an order of magnitude.¹⁶ (8) A final example of where ICRP, in my estimation, has been somewhat negligent is in meeting the need of an in depth treatment of the environmental releases of radionuclides of greatest concern in the nuclear industry. Here we think of H-3, C-14, Sr-89 and -90, I-131, Cs-134 and -137, noble gas etc. Such a publication might help to answer many recurrent questions such as: What are the genetic risks of these radionuclides? Was ICRP justified in reducing the quality factor of the low energy beta radiation of H-3 from 1.8 to 1.0 when theory suggests the value of 2 is more appropriate? Why do some nuclear power plants discharge routinely into the environment a hundred times the curies of fission products released by the average power plant? Should additional efforts be made to reduce the large routine release of noble gases and H-3 by a nuclear power plant? Should power plants monitor the release of C-14? In the foregoing I have discussed what I consider are some of the weaknesses of omission of ICRP and given a few typical examples. Perhaps there are as many weaknesses of commission by ICRP but in the following I will discuss only one, namely the ICRP-26 handbook and how it has resulted in an increase	142 RADIATION AND HEALTH in values of maximum permissible concentration (MPC) for many of the more common and more dangerous radionuclides such as Sr-89 and Sr-90, I-131 and Pu-238, Pu-239 and Pu-240. The values now recommended by ICRP are higher than we developed in 1959 for ICRP-2 when I was chairman of the Internal Dose Committee of ICRP. This increase might be justified were the risk of radiation-induced cancer much less than we perceived it to be almost thirty years ago but just the contrary is the case; today the cancer coefficient is known to be at least an order of magnitude greater than it was perceived to be in 1959. During the last few years that I was an active member of the Main Commission of ICRP, we discussed an inconsistency in our basic internal dose standard, namely, the values of MPC were based on concentrations in air, water and food that at the end of an occupational exposure period of fifty years would result in dose rates of 5 rem/y to total body, gonads and active (red) bone marrow, 40 rem/y to bone, thyroid and skin and 15 rem/y to all other body organs that were the critical body organs (usually the organ with the greatest concentration of the radionuclide). In short, our Internal Dose Committee was criticized for using the same dose rate limit for gonads and active marrow as for whole body because, were the whole body exposed to 5 rem/y the gonads and active bone marrow also would be exposed to 5 rem/y. Partial body exposure was known to be less harmful than whole-body exposure so the permissible dose rate of the whole body should not be the same as that to the gonads and active bone marrow. It seemed to me the solution was very simple, namely reduce the whole-body dose rate to 2.5 rem/year. However, some members felt this would be a hardship to the nuclear industry and we should keep the limiting whole body dose at 5 rem/y for the nuclear worker exposure both to internal and external sources of radiation. I took the view that the external dose limit of 5 rem/y as well as the internal dose limit was too high and both should be reduced to be more in conformance with our realization that the cancer risk from radiation was greater than we thought it to be when these limits were first set. Unfortunately, in 1977, some years after I had been moved to the status of an emeritus member, ICRP-26 was adopted in which the limiting dose rates after fifty years of occupational exposure were set at 5 rem/y to whole body, 20 rem/y to gonads (an increase by a factor of 4), 42 rem/y to active bone marrow (an increase by a factor of 8.3), 42 rem/y to lungs (an increase by a factor of 2.8), 50 rem/y to thyroid and bone surfaces (an increase by a factor of 1.7) and 13 rem/y to breasts (an increase by a factor of 2.2). While I was still an active member of ICRP (not yet moved to the status of an emeritus member) we also discussed the possibility that with the coming of the computer age we should be more sophisticated and calculate the MPC now just on the basis of the dose to a critical body organ from the radionuclide that was in this organ but also from what was in all the body organs as they	

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

C-630

ICRP RISK ESTIMATES: AN ALTERNATIVE VIEW

147

148

RADIATION AND HEALTH

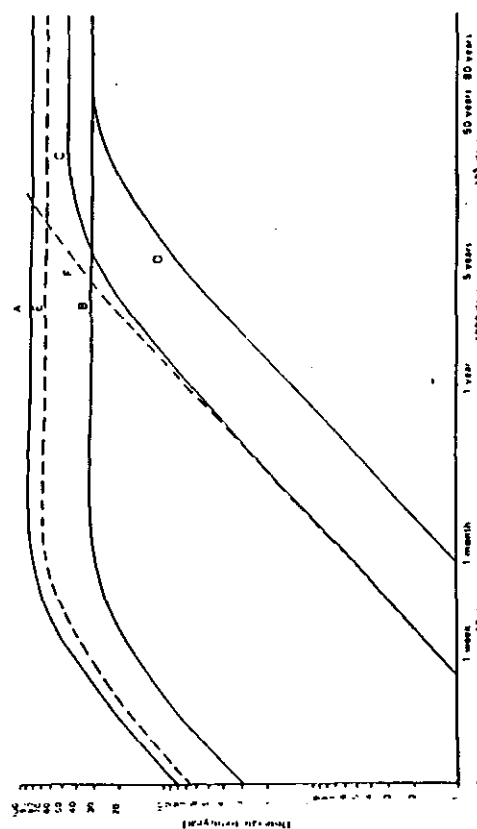


Figure 5. Period of occupational exposure.

- A Exposure to 1.131 at ICRP-30 level of DAC = 700 Bq/m³ (1.9×10^{-5} μ Ci/cc)
- B Exposure to 1.131 at ICRP-30 level of 9×10^{-5} μ Ci/cc
- C Exposure to Sr-90 at ICRP-30 level of DAC = 60 Bq/m³ (1.62×10^{-5} μ Ci/cc)
- D Exposure to Sr-90 at ICRP-30 level of 3×10^{-5} μ Ci/cc
- E Exposure to 1.131 at DAC = 100 Bq/m³ but using values of EQN. 2a, m and T from ICRP-2
- F Exposure to Sr-90 at DAC = 60 Bq/m³ but using values of EQN. 2a, m and T from ICRP-2

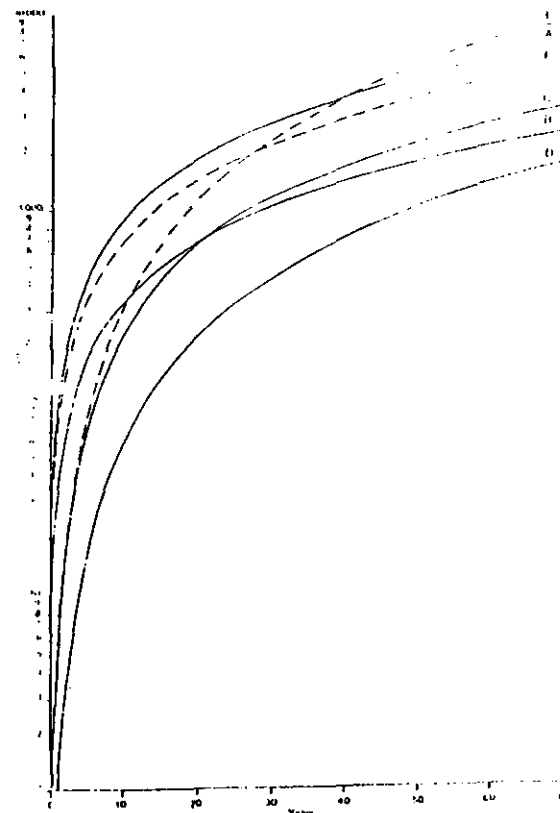


Figure 6. Period of occupational exposure (years).

- A Accumulated dose from exposure to 1.131 at m, k, p, h, w, c, o, d, a, t, e, s, of 1.9×10^{-5} μ Ci/cc

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

ICRP RISK ESTIMATES—AN ALTERNATIVE VIEW

149

In the above it is pointed out that ICRP has now increased the limiting dose rate to all individual body organs except when the whole body itself is the critical body organ, i.e. the radionuclide is distributed rather *uniformly* in the body such as would be the case for H-3 taken in as ITO. The dose rates listed above are those to which the body organ of the radiation worker would be subjected were he to be exposed at the MPC of one of these radionuclides in air, water or food for fifty years at 40 hours per week and 50 weeks per year. This limiting dose rate, after fifty years as given by ICRP-30 for example, is 50 rem/y to bone surfaces and to the thyroid. Actually in these cases ICRP sets what it calls the limiting committed effective dose equivalent, CEDE, ^{4,29} during a year at 50 rem. That is, a worker, for example, can take in Sr-90 during a year in any manner provided the dose from this one year intake is no more than 50 rem when the bone surface dose is integrated thereafter over fifty years. In Appendix I it is shown that intake for a work year at the MPC will deliver a critical body organ dose integrated over fifty years that is equal to this CEDE and this CEDE is equal to the dose rate that would be reached in this organ after fifty years of occupational exposure multiplied by one year, i.e. it is numerically equal to the dose rate reached in this organ following fifty years' exposure at the MPC. This is shown in Figure 4 for the case of occupational exposure to Sr-90. Curve A shows the increasing dose rate to bone surfaces of the radiation worker working in a constant work environment 40 hours per week, 50 weeks per year for fifty years when the air concentration is maintained at the present ICRP-30 DAC of 60 Bq/m³ (1.62×10^{-9} μ Ci/cc) of Sr-90. In this case I took the ICRP value of $f_a = 0.01$ as the fraction of Sr-90 going to bone surfaces and $m = 120$ g as the mass of these surface tissues. ICRP-30 did not give a separate value for the fraction of Sr-90 going from blood to bone surfaces so I interpreted the 0.01 value to be the product of the fraction to blood by the fraction from blood to bone surfaces. A value was not given in ICRP-30 for the biological half-life so I back calculated to get $T = T_b T_d / (T_b + T_d) = 4.961$ years in order that the fifty-year integration of dose rate from a year's intake would be 50 rem as required by ICRP-30. I used the EQN 1.1 MeV per disintegration of Sr-90 plus its daughter Y-90. It should be emphasized that ICRP-2 set $N = 5$ or EQN = 5.5 MeV per disintegration and since I see no justification for ICRP having set $N = 1$ in ICRP-30, I believe

- H Accumulated dose from exposure to 1.131 at ICRP-2 level of 9×10^{-9} μ Ci/cc
 C Accumulated dose from exposure to Sr-90 at ICRP-30 level of DAC = 60 Bq/m³ (1.62×10^{-9} μ Ci/cc)
 D Accumulated dose from exposure to Sr-90 at ICRP-2 level of 3.1×10^{-10} μ Ci/cc
 E Accumulated dose from exposure to Sr-90 at DAC = 60 Bq/m³ but using values of EQN, f_a , m and T as given in ICRP-2
 F Accumulated dose from exposure to 1.131 at DAC = 700 Bq/m³ but using values of EQN, f_a , m and T as given in ICRP-2

150

RADIATION AND HEALTH

the dose rate values of curve A in Figure 4 are under-estimated at least by a factor of 5. The equations for curves A and D are derived in Appendix II. It is noted that both curves pass through the dose rate limit at fifty years—Curve A at 50 rem/year and Curve D at 30 rem/year. Curve A with a shorter half-life ($T = 4.96$ y) reaches its equilibrium at 50 rem/y in about forty years whereas Curve D with a longer half-life ($T = 17.53$ y) passes through 30 rem/y (at 86 per cent of equilibrium) at fifty years but as shown by Curve D in Figure 5 it would not reach its equilibrium level of 34.8 rem/y until about 150 years. As indicated by Curve C in Figure 6, exposure at the new DAC of 60 Bq/m³ (1.62×10^{-9} μ Ci/cc) for Sr-90 for fifty years would result in an average bone surface dose of 2140 rem but, as indicated by Curve E, when applying the values of EQN m and T as given in ICRP-2 this would result in a total bone dose of 5130 rem. Figures 5 and 6 indicate similar increases in thyroid dose rate and dose for I-131 except that the equilibrium dose rate in Curve A of Figure 5 is 91 rem/y instead of the ICRP-30 limit of 30 rem/y. No reason is given in ICRP-30 for this apparent discrepancy. Figure 6 indicates the 50-year accumulated dose by ICRP-30 specifications is 4570 rem (Curve A) and by ICRP-2 specifications is 1680 rem (Curve B). I see no justification for any of these increases.

CONCLUSION

In conclusion I wish to re-emphasize that I have limited this discussion to criticisms of the work of the Main Commission of ICRP in its accomplishments and lack of them over the past sixty years. In this I am pointing the finger at myself as well as to others because I was one of this thirteen member body for about twenty years. Some of the committees of ICRP have done an excellent job. My principal criticisms of the Main Commission are that in many cases it has not responded to important situations of high exposure to ionizing radiation or has been unnecessarily slow in response and it has increased permissible exposure levels at a time when they should have been reduced.

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Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

ICRP RISK ESTIMATES—AN ALTERNATIVE VIEW

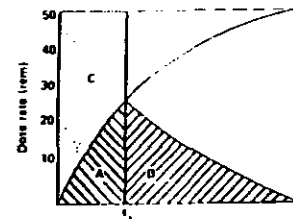
151

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RADIATION AND HEALTH

152

APPENDIX I



To show that area A + area B = area C

$$= R_0 \left[\frac{1.87 \times 10^{10} \text{ L}^2 \text{N} (1 - e^{-\lambda t})}{\lambda^2} + \frac{C_1}{\lambda} (1 - e^{-\lambda t}) \right] \text{remj.}$$

$$A = \int_0^{t_1} R dt = \frac{C_1}{\lambda} (1 - e^{-\lambda t_1})$$

$$B = \frac{C_1}{\lambda} (1 - e^{-\lambda t_1}) \int_{t_1}^{t_2} e^{-\lambda t} dt = \frac{C_1}{\lambda^2} (e^{-\lambda t_1} - e^{-\lambda t_2}) (1 - e^{-\lambda t_1})$$

$$= \frac{C_1}{\lambda^2} (1 - e^{-\lambda t_1} - e^{-\lambda t_2} + e^{-\lambda t_1 - \lambda t_2})$$

$$A + B = \frac{C_1}{\lambda} (1 - e^{-\lambda t_1}) \quad (1)$$

$$t_1 R(t_1 + t_2) = \frac{C_1}{\lambda} (1 - e^{-\lambda t_1 - \lambda t_2}) + \frac{C_1}{\lambda^2} (\lambda t_1 - \lambda t_1 e^{-\lambda t_1 - \lambda t_2}) \quad (2)$$

and

$$A + B = t_1 R(t_1 + t_2) (1 - e^{-\lambda t_1} + e^{-\lambda t_1 - \lambda t_2}) = -\lambda t_1 e^{-\lambda t_1 - \lambda t_2} + \lambda t_1$$

multiplying by $e^{\lambda t_1}$ we have $-1 + e^{-\lambda t_2} + \lambda t_1 e^{-\lambda t_2}$ and $e^{\lambda t_1} = 1 + \lambda t_1$.

Expanding by Maclaurin's Series,

$$e^{\lambda t_1} = 1 + \lambda t_1 + \frac{\lambda^2 t_1^2}{2} + \frac{\lambda^3 t_1^3}{6} + \frac{\lambda^4 t_1^4}{24} + \dots$$

If $\lambda t_1 \ll 1$, $e^{\lambda t_1} \approx 1 + \lambda t_1$.

For

$$\text{Since } \lambda t_1 = \frac{1.87 \times 10^{10} \text{ L}^2 \text{N}}{17.53} \approx 10^{-10} \text{ and } 1 + \lambda t_1 \approx 1.04$$

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

Attachment-3

A Quick Look at Some of the Radiation Hazards
Associated with the Galileo Mission

by

Karl Z. Morgan

September 19, 1989

Drs. H. A. Poehler and Lanny Sinkin requested that I look into the radiation risks associated with the proposed October 12, 1989 launch of the Galileo Plutonium Shuttle in a Mission to Jupiter. Unfortunately this request came at a time I am deeply involved in two cases where persons have been seriously overexposed by radioactive material and when I am preparing for two overseas trips within the coming two weeks. I must and am, however, herein spending two days to write this and call attention to two radiation problems associated with this mission. These are: A - Erroneous statements regarding the risks and their magnitude and B - Possible oversights and alternative solutions to this problem.

Before beginning this discussion, however, I should state I enthusiastically support efforts to study all bodies in our solar system and of our nearest stars (e.g. Proxima Centauri 4.16 light years* (LY), Alpha Centauri 4.3 LY, Barnard's Star 6.36 LY, Sirius 8.8 LY, etc.). As a member of the Planetary Society, I strongly endorse all efforts to explore outer space to learn more about the past, present and future of the universe since the big bang and to find out if life exists other than that on earth and, if so, its state of development. On the other hand, as one of the principal organizers of health physics when its goal was to be a science and a profession, I would like to be assured that the radiation risks are adequately studied, sufficiently

*1 LY = 186,000 mi/sec x 3.154 x 10⁷ sec/y x 1 y = 5.87 x 10¹² miles

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

understood and appropriately attended so that we do not seriously harm man and his environment or obscure and confuse the information we seek.

A - During the 38 years I have been working with ionizing radiation I have seen so many mistakes, misstatements, coverups and untrue statements by members of our government agencies (e.g. AEC, DOE, NRC, NASA, etc.) and by representatives of the nuclear industry that I seek independent safety evaluations of radiation risks before I trust their accuracy.

The day before the US space rocket carrying 17,000 Ci (2.15 lbs) of Pu-238 was scheduled to blast off some of my AEC friends assured me the risk of an abortive mission and earth reentry was 10^{-7} (one chance in 10,000,000). I laughed at them because this was essentially a zero risk of reentry. As it turned out the risk was $10^0 = 1$ or the rocket and its cargo of 2.15 pounds of Pu-238 was incinerated over the Indian Ocean in April 1964. As I have pointed out,¹ this was a cause of concern. For example, if only 0.0004% of this plutonium were taken up equally by all people of the world (4.5×10^9) this would deliver 25 mrem/y (the present EPA limit for persons living near a nuclear power plant) to them every year of their lives. We of course do not know how much of this Pu-238 resides in persons now living or dead and in children to be born the next 100,000 years, but it is not unreasonable to assume it will have caused many thousands of deaths. By comparison, if Galileo incinerated its 50 lbs of Pu-238, the risk to the world population would be over 20 times greater. To make matters especially bad, Pu-238 deposited in some body organs is there essentially permanently (e.g. biological half life in bone is 200 years). Further, there are more radiation induced cancers per rem at low doses^{2,3,4} (especially for alpha emitters) than at high doses. The cause of a cancer at low doses may "hide" but this cannot remove the guilt of those who are responsible.

Some of our government administrators seem to be slowly learning not to underestimate radiation risks by orders of magnitude. For example, the scien-

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	tist⁵ in charge of reviewing the Galileo mission set his estimate of plutonium release at 10^{-4} instead of 10^{-7} and later recanted this estimate agreeing that this was far too low and C. Redmond, a NASA spokesman confirmed the risk to be about 2×10^{-3}. These risk estimates are certainly better than the 10^{-5} value NASA used for the Challenger before its accident. From the limited data I have seen, I would hesitate to put the risk of a Pu-238 release in the Jupiter Mission at less than 10^{-2}. Another serious fault of the nuclear establishment or supporters (AEC, DOE, NRC, NCRP, NASA, ACRS, ICRP, nuclear power companies, employees of National Laboratories, most present-day health physicists, etc.) is they underestimate the risk of radiation induced cancer or the cancer coefficient, $S = \text{cancer deaths/person rem}$. These persons and organizations still use $S = 1$ to 2×10^{-4} when careful evaluation of major studies^{2,3,4,6} of radiation induced cancer at low levels of exposure confirm that it cannot be less than 10^{-3}. Sadly, these supporters of the nuclear establishment seem to have set a new definition of "science." To them it is a science that obtains answers you want, that confirm preconceived ideas, that offers the greatest rewards. Dr. Paul C. Tompkins, Dep. Dir. of the Federal Radiation Council on Sept. 25, 1962 in a letter to Dr. G. Seaborg, chairman of AEC and to others explained how the establishment operates when he said in regard to forming committees to determine risk, set standards, etc. "The basic approach to the report would be to start with a simple, straightforward statement of conclusions. . . . It would then be a straightforward matter to select the key scientific consultants whose opinions should be sought in order to substantiate the validity of the conclusions or recommend appropriate modifications." Dr. D. W. Moeller,⁷ long time chairman of ACRS hit the nail on the head by saying when he delivered the President's Message to the Health Physics Society, "Essential to such leadership (for a growing society) is that we speak out and make known our	

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

positions on such issues as nuclear power safety and radiation protection guides. . . . To paraphrase an old adage, 'Let's all put our mouth where our money is'."

During this same period there was a move underway to lower the maximum permissible body burden of Pu-238, -239, or -240 below the 0.04 uCi (2.3×10^{-9} g or 5.1×10^{-12} lb) level because of the so-called "particle problem." Since the volume of a sphere of tissue with 0.04 uCi of Pu-238 or -239 at the center increases as the cube of the radius and the dose to a body tissue varies inversely as the mass of tissue receiving this dose, the dose containing this 0.04 uCi in a single particle is extremely large, i.e. 1.4×10^{12} rem (1,400,000,000,000 rem). Many of us and a number of organizations, e.g., Natural Resource Defense Council, tried unsuccessfully to lower the permissible body burden of plutonium by one or two orders of magnitude. There were a few studies suggesting 1 uCi of plutonium spread out over a large volume of tissue was less harmful than when contained in a small particle in the body but there were other studies giving the opposite result. For example, a study by H. Lisco, M. P. Finkel and A. M. Brues⁸ indicated that α particles (1 ug or 0.061 uCi) of Pu-239 "injected locally under the skin (of mice) induced fibrosarcomas even though a portion of the injected dose was removed (by body fluids) from the site of injection."

As the AEC saw it this was a matter for committee decision. The committee apparently was selected by the standard rule (the one spelled out above by Tompkins) and the proper decision was assured -- no particle problem.

Some time later I published a paper⁹ showing the value of 0.04 uCi for plutonium was too high at least by a factor of 200 but it suffered under the Tompkins rule. Still later, R. P. Larsen and R. D. Oldham¹⁰ published a paper showing the effects of oxidation states of plutonium on its uptake by the GI-Tract. They found that when the plutonium was administered in the

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

Pu(III) state the retention in the bone and liver after four days was 0.005%, in the Pu(IV) state 0.001% and in the Pu(VI) state 1.75%.* After 80 days the retentions were 0.010, 0.001 and 1.57 percents, respectively. They found that Pu(IV) is oxidized to Pu(VI) by chlorination in water treatment plants so most Pu would be Pu(VI) in city drinking water. Food in the stomach, however, may convert much of the Pu(VI) to Pu(IV). Thus, sarcastically speaking, water should not be chlorinated because today Pu is present almost universally in water and persons are at risk if they drink water without food on their stomach? Needless to say, the ERDA (successor to AEC) had a field day depreciating these findings.

G. B. Stillwagon and I¹¹ have a paper just off the press showing the 0.04 uCi level for Pu may be too high by at least 1,000.

Perhaps one might ask is Pu-238 as harmful as Pu-239. In 1964 W. S. Snyder, M. R. Ford and I¹² published a paper showing Pu-238 is 150 times more hazardous than Pu-239.

From the atmospheric testing of nuclear weapons there are about 3×10^5 Ci (1.72×10^4 g or 38 lb) of Pu in the earth's surface environment and only a small fraction is Pu-238 (Pu-238 contamination in a weapon could cause unwanted heating and neutron emission). Now NASA plans to add 50 lbs of Pu-238 to the 38 lbs five nations have added in a period of folly to our environment. Realizing the dangers of Pu to life on this planet, nations have agreed to desist from further atmospheric testing. Will the US defeat or run the risk of defeating the purpose of this international agreement?

5 - Unfortunately, this section on solution of the problem is short because there is no adequate solution at the present time if man is to continue

*Note: The present standards and levels of maximum permissible concentration of plutonium in food, water and air use 0.0026%.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-639	missions beyond the inner planets (beyond Mars). In the above I have mentioned a few of the problems but without doubt there are many more. For example, I have yet to see a discussion of the problems caused by the 5.2×10^7 fast neutrons produced per second by spontaneous fission of this 50 pounds of Pu-238. This would correspond to $415n/cm^2S$ at one meter if there were no thermalization and attenuation. I do not know the details of construction of these sources but an inch of graphite and the thin metals about the sources are very ineffective in reducing neutron dose. This $415n/cm^2S$ corresponds to 3.53×10^3 rem/y for an RBE of 7 for neutrons in the range of 5 to 7.5 MeV from the Pu-238. I would think more and better neutron shielding is required to protect instruments and persons near these sources. Other radionuclides such as a mixture of Pb-210 (21y) and Po-210 (138d) might be considered along with solar panels. Were this combination adopted, in the inner planet vicinity, reliance would be mostly on the solar panels for energy but as the beta emitting Pb-210 decayed into its alpha emitting granddaughter Po-210, energy would come from the Po-210 5.305 MeV alpha emission. As I¹³ have indicated the activity of parent and daughter are equal and the alpha activity of the daughter (Po-210) reaches a maximum at $t = 3.32 \frac{T_p T_d}{T_p - T_d} \log_{10} \frac{T_p}{T_d}$ $t = 3.32 \frac{21 \times 138.4/365}{21 - 138.4/365} \log_{10} \frac{21 \times 365}{138.4}$ $t = 8.64 \text{ years}$	
	The proper mixture of these two radionuclides at take-off could assure proper results throughout flight. This substitution, however, probably would not be practical because of the major difficulty in getting enough Pb-210 (i.e. 1:	

Table C-7. Public Comments and DOE Responses

Comment
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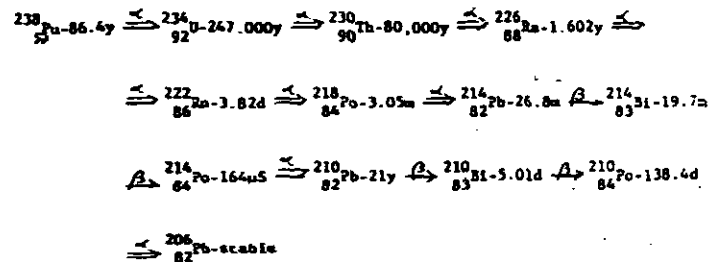
Response

has been discarded mostly as a waste product in the uranium refining industry).

A beta emitter such as Sr-90 (27.7y) plus its Y-90 (64hr) daughter with energies of 0.546 MeV and 2.27 MeV, respectively, would require more curies than Pu-238 (with an alpha of 5.5 MeV). This would be a hazardous choice but the 27.7 year half life, rather than the Pu-238's 86.4 year half life and a biological half life in bone of 50 years rather than the Pu-238 value of 200 years would be distinct advantages for this substitution.

Mixtures of Cs-137 (30y) and Cs-134 (2.05y) should not be considered because here the environmental hazards might be as bad as those with Pu-238.

Another oversight may be lack of consideration of the daughters of Pu-238. The chain of course is



Thus, with the dispersal of Pu-238 from these heat generators we are not concerned solely with the 86.4y half life of Pu-238 but with its daughters and granddaughters that would be around for millions of years. Although I would dearly love to know the findings of a Jovian mission, I must strongly urge its blast-off be delayed until more independent studies are completed.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
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Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

Attachment 4

1984 Castleway Drive
Atlanta, GA 30345
May 4, 1988

Mr. Lando W. Zech, Jr., Chairman
U.S. Nuclear Regulatory Commission
1 White Flint North
11155 Rockville Pike
Rockville, MD 20802

Dear Mr. Zech:

During the period of April 13-19, 1988 I attended meetings in Sydney, Australia of three organizations, the International Radiation Protection Association (IRPA), the International Commission on Radiological Protection (ICRP) and the International Atomic Energy Agency (IAEA). At these meetings Mr. R. E. Alexander of your organization gave a paper with which I strongly disagree. The principal focus of his paper was that he and his staff were recommending to you that the NRC not follow the lead of the UK by reducing the maximum permissible exposure (MPE) for occupational workers by 1/3, i.e. from 5 rem/y to 1.5 rem/y. He proposed that the NRC mimic the ICRP and count more bodies before reducing the MPE.

I was one of the 13 members of ICRP for over 20 years and now am one of its 4 emeritus members but have been strongly in opposition to two of its recent moves: 1) to increase levels of maximum permissible concentration (MPC) of radionuclides in air, water and food at a time when the changes should have been in the opposite direction because the risk of radiation induced carcinoma is now known to be much greater than we thought it to be when ICRP-2 was published in 1959 and 2) at its 1987 meeting in Como, Italy ICRP acknowledged that its estimate of risk of radiation induced fatal cancer, $\sigma = 1.25$ per 10,000 person-rem, was too low in light of recent publications of the RERF Japanese research group doing studies on survivors of the atomic bombings of Hiroshima and Nagasaki but failed to act.

As you know, the recommended values of MPE as given by ICRP and applied by the NRC are based on values of σ as determined by the Japanese studies.

Prior to the Como meeting of ICRP a petition signed by over 800 scientists (including myself) from 16 countries requested the ICRP to reduce the MPE level. In response the ICRP acknowledged that "Under the new DS-86 dosimetry this increase in risk is reported as being by a factor of about 1.4" and that longer follow-up "and other factors cited in the paper (D.L. Preston and D.A. Pierce of RERF) raise the risk estimate for the exposed population by a further factor of the order of 2." The product of these two factors is about 3. To me it was incredible and amazing that in spite of this recognition of fact the ICRP concluded, "This information alone is not sufficient to warrant an immediate change in the dose limits."

Fortunately for the workers in the UK the National Radiological Protection Board took appropriate action to protect its radiation workers in November 1987 (NRPB-G59) and ruled "Consequently, the Board recommends that the occupational

C-642

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

Mr. Lando W. Zech, Jr., Chairman
May 4, 1988
Page 2

workers exposure should be so controlled as not to exceed an average effective dose equivalent of 15 mSv per year (1.5 rem/y)." This reduction by a factor of 3 has been taken as an initial step with the understanding that additional reductions probably will be required when the reevaluation of the Japanese data is completed. The need for an additional reduction seems eminent because Preston and Pierce using a linear dose-effect model arrive at a radiation cancer risk of $\sigma = 16$ fatal cancers per 10,000 person-rem or $(1.25/16) \times 5 \text{ rem/y} = 0.39 \text{ rem/y}$ or a reduction by a factor of 12.8 instead of a factor of 3.

Regarding the first move of ICRP to which I have objected (mentioned above), I enclose a copy of a table which I gave in a lecture in London last year and which was published in the book Radiation and Health by Jones and Southwood, John Wiley & Sons. This table emphasizes the appalling fact that when ICRP published ICRP-26 (1977) and ICRP-30 (1979) it increased rather than decreased the MPC values for a number of the radionuclides of major concern to the NRC such as Sr-90, C-14, Co-60, Y-131 and Pu-239. I was chairman of the original Internal Dose Committees of both ICRP and NCRP for over 20 years and this was during the time when ICRP-2 was published. This ICRP-2 is the basis of NRC limits set in its former Title 10 Part 20 regulations which were in use by the NRC for over two decades. I testified before the ACRS in opposition to the NRC moving in the wrong direction and using the ICRP as a template in revising its values of MPC and was under the impression that Mr. Alexander sided with me on this issue, but apparently I was mistaken--politics and appeasement of those in the nuclear industry rather than a lower cancer risk are more important. Incidentally, as one of the five first health physicists (there are 20,000 in the world today), as the director of the Health Physics Division of ORNL for 29 years and as the first president of both the Health Physics Society and the IRPA, I still am in favor of the proper use and development of nuclear energy but not at any cost. I applauded the NRC when it set the value of 1 rem at \$1,000 or the value of a human life at \$10,000,000 (i.e. $\$1,000 \div 1 \text{ fatal cancers per } 10,000 \text{ person-rem} = \$10,000,000 \text{ per fatal cancer}$). Now, however, with $\sigma = 10^{-3}$, \$1,000 per person rem corresponds to only \$1,000,000 per human life. Is this an appropriate evaluation? I believe we could have this industry without coverups and half truths; I believe that some of the nuclear power plants have an excellent operating record and should be commended and encouraged to further improvements while others have a miserable record of safety and acceptable operational history and should have been shut down and decommissioned permanently. I hope in the years to come a major portion of the interest and effort of NRC will be in the development of inherently safe nuclear power plants--only then will we have no more Chernobyls and can we expect more orders in the US for new nuclear power plants. Many persons balk at the nuclear waste problem and believe it is insoluble but as the director of the ORNL-HP division that conducted the studies on disposal of high level nuclear waste in the Kansas bedded salt formations, I believe this problem can be solved but only by a hard-nose policy and programs and not by depreciating the risk of radiation induced cancer and failure to acknowledge facts. Since I left ORNL in 1972, the radiation waste disposal program has languished and is trying to reinvent the wheel.

There are many reasons why the cancer risk is greater than that given in BEIR-III & IV. I enclose also a few additional pages from the above references.

C-643

Table C-7. Public Comments and DOE Responses

Response

Comment

Comment Number

Mr. Lando W. Zech, Jr., Chairman
May 4, 1988
Page 3

In this I give some of these reasons. Also, we must recognize as concluded by an expert committee of the GAO (Report to the Congress of the United States, Problems in Assessing the Cancer Risks of Low-Level Ionizing Radiation Exposure Vol. 2, EMD-81-1, Jan. 2, 1982) that at low doses the supra linear relationship fits the data better than the linear function and for this reason alone we should be cautious in avoiding all unnecessary exposure and follow the ALARA principle. The weak arguments given by Mr. Alexander for not reducing the MPE are available to you so I do not enumerate them here. They came into insignificance in relation to these other facts, some of which I have provided you.

I have testified in the House and the Senate many times and when the issue came up of uranium miners working at Rn-222 levels equal to and higher than those in the cobalt mines of Schneeberg and Saxony and Joachimsthal of Bohemia in 1500, I did what I could to reduce these exposure levels but it was like hollering in the wind. I was frustrated when the USPHS and the PAC sided with the AEC and they offered congressional testimony to try to negate that which I offered. I had been naive in believing the USPH Service was operated to protect the health of people in the U.S. I was not surprised that the AEC sided with industry. However, I rejoiced in that an honest man finally turned up in Washington. Mr. Wirtz, Secretary of Labor, came to the rescue of the dying uranium miners. Following my testimony before the Department of Labor he unilaterally reduced the level I had recommended to 4 WLM/y (- 3 x 10⁻⁸ uCi/cc of Rn-222). I often wonder how Democracy survives in a society where money and social and political stature are all important but now I know. It takes only one honest man under the right circumstances to make Democracy work. I hope and pray in this instance I am not disappointed.

In conclusion I will be most grateful if you provide the other Commission members with a copy of this letter. There will be no need to have Mr. Alexander respond to this letter because I have already heard him expound his views on this subject. Also, I wish in no wise to deride or berate him; everyone should have a right to express his views and establish his position on an issue of public concern. In this case, of course, you are the one to evaluate these opinions and make the decision. I trust it will be in favor of the radiation workers.

Respectfully submitted.

Sincerely,
Philip Morgan
Philip L. Morgan

KZM:lsg
Enclosures

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

1st Set

Attachment 5

Comments Relative to Treatment and Disposal of
2,100,000 gal. of Contaminated Water at TMI-2

by

Karl Z. Morgan

March 19, 1987

Qualifications to Express an Opinion

1 - So far as I can determine I am the first person to publish a paper showing how to calculate dose from internal exposure to ionizing radiation and set standards of MPC ("Tolerance Concentration of Radioactive Substances," by K.Z. Morgan, J. Phys. & Colloid Chem. 51, 984, 1947).

2 - I was chairman of the Internal Dose Committees of both ICRP and NCRP for about two decades.

3 - I have worked with and researched ionizing radiation and health physics problems for over 50 years.

Materials Reviewed in Preparing These Comments

- 1 - NUREG-0683 Sup. No. 2 (draft report)
- 2 - GPU Nuclear Corp. Attachment 4410-87-L-0023
- 3 - GPU Nuclear Corp. Attachments 4410-86-L-0178
- 4 - NCRP Commentary No. 4, "Guidelines for the Release of Waste Water from Nuclear Facilities with Special Reference to the Public Health Significance of the Proposed Release of Treated Waste Waters at TMI," 1987

Comments

My comments are very brief because I have been able to spend only two days on this review.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	<u>Comments on NCRP-Comm. No. 4 Report</u>	
	I believe that although the task group that prepared this report contained some experts in the area of radioactive waste disposal (e.g. F. L. Parker, J. W. Healy and D. G. Jacobs), the final conclusions should not be accepted in the decision to dispose of the radioactive water by the methods proposed by GPU without some modifications. I agree with their conclusion that after evaporation the vapor should not be released up the 50 meter stack but pumped to the 11,000 gal. condensate test tanks. Discharging the condensate via mixing with the 22,000 gal. per minute blow down water from the draft cooling tower is far better than direct discharge to the river but I am opposed to this method of disposal. I urge that, rather, investigation be made of disposal of the 2.1×10^6 gal. of water by one of the following methods listed in decreasing order of preference. 1 - Load the water (condensed vapor) into tank cars and ship and transload on a boat for disposal at sea. This would provide a far more rapid means of dilution. This method of sea disposal should receive no serious challenge by those concerned with our International Agreements Regarding Sea Disposal[*] because of the relatively low level of radioactivity and predominance of H-3. Using this method of disposal the insult to the marine environment and to man would be orders of magnitude less than those posed by the English operations near Seascale where they discharge radioactive waste into the Irish Sea. The shipment of the 420 carloads using 5,000 gal. tank cars should present no serious risks. 2 - Load the water (condensed vapor) in 5,000 gal. tank cars and send to a site prepared to dispose of the water by deep-wall injection. Con-	
	[*] One of these is that of the London Dumping Convention, IMO-198.	

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

sidering there will be very little solid material in this condensate,
deep-well disposal is made to order.

- 3 - Dispose of the water (condensed vapor) by shipping in 5,000 gal. tank
cars to a site prepared to dispose of it by the hydrofracture method.

Comments on the NUREG-0683 Sup. No. 2 Report and the Two GPU Attachments

These reports as well as the NCRP report underestimate throughout the dis-
cussions the dose to the individual (rems) and the population dose (person rems).
The NCRP report is doubly at fault in that it uses values of σ (the cancer coef-
ficient = cancers (either incidence or mortality) = 10^{-4} cancers/person rem)
which I and many others in this field believe is low at least by an order of
magnitude, i.e. the value should be no less than 10^{-3} cancer deaths per person
rem. (See the chapter, p. 216-229, in the Encyclopaedia Britannica, "Hazards of
Low-Level Radiation," by K.Z. Morgan. Copy attached.)

This NUREG report gives a table No. 2.5 of the NRC concentrations in air and
water (above background) that are acceptable in restricted areas. Below I re-
produce the first and third columns from this table but add the EPA values I
calculate that are based on the EPA limit of 4 mrem/y to the total body for
drinking water. Values are not given by EPA for bone so in this table I increased
the value for bone from 4 mrem per year (for total body) to $(30/3) \times 4 = 24$ mrem/y
because the ICRP-2 limit for occupational exposure of bone is 30 rem/y and the
limit for total body is 5 rem/y.

Isotope		Water Activity Limit of NRC ($\mu\text{Ci/cc}$)	Water Activity Limit of EPA ($\mu\text{Ci/cc}$)
H-3	S-TB	3×10^{-3}	2.4×10^{-3}
	I	3×10^{-5}	--
	Sub	--	--

$$\frac{3}{2.4} = 1.25$$

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

Isotope		Water Activity Limit of NRC ($\mu\text{Ci/cc}$)	Water Activity Limit of EPA ($\mu\text{Ci/cc}$)
Cs-137	S-TB	2×10^{-5}	1.6×10^{-7}
	I	4×10^{-5}	--
Sr-90	S-B	3×10^{-7}	3.2×10^{-9}
	I	4×10^{-5}	--

S = Soluble, I = Insoluble, TB = Total Body, B = Bone

Here it is noted there is essential agreement for H-3 but the NRC value is 125 times the EPA value for Cs-137 and 12,500 times the equivalent value for Sr-90.

When two Government Agencies differ to such extremes in evaluating an environmental risk, I believe the peoples' court, DA, in the interest of safety, should insist the more conservative agency and the one in this case established to protect man and his environment, takes precedence.

Next, I took a quick look at Tables 2.2 and 2.3 in NUREG-0683 Sup. No. 2 and the tables in the two GPU Attachments. The data in these tables were somewhat surprising. Below in columns 2 and 3 (1st two items) I give data from these tables. Where the values in these reports differed, I entered in column 2 the value that was published last. I derived equations (see Appendix) and made a number of calculations (having available only a hand calculator) and entered some of the results in the above table. All the values are for the adult (standard or reference man). The doses in most cases would have been considerably larger for the child but I have not had time to make these calculations. The dose values marked (a) given in NUREG should check with my calculated values of dose marked (b) but it will be noted two of my values, 14 mrem for H-3 and 3,680 mrem for Sr-90, are larger than the NUREG values that are 7.8 mrem for H-3 and 960 mrem for Sr-90. My value of 1.6 mrem for Cs-137 is lower than the NUREG value of 2.6 mrem. These differences should be investigated.

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

Radionuclide, ($t_{1/2}$), and (Effective Half-Life)	Base Case	Achievable Values
H-3 ($t_{1/2}=12$) (10 days in total body)		
Activity ($\mu\text{Ci/cc}$)	0.13	0.13
Dose Estimates (mrem)		
NUREG-0683-2	7.8 ^(a) TB	7.8 mrem TB
One year dose from continuous exposure	10,600 TB	
70 year dose from continuous exposure	7.7 x 10 ⁵ TB	
Dose from 1 day's intake of 10 ³ cc water	14 ^(b) TB	
Dose from 1 day's intake of 2,200 cc water/day	30 TB	
Cs-137 ($t_{1/2}=30$) (70 days in total body)		
Activity ($\mu\text{Ci/cc}$)	3.7 x 10 ⁻⁵	4.0 x 10 ⁻⁶
Dose Estimates (mrem)		
NUREG-0683-2	2.6 ^(a) TB, 3.0 B	0.29 TB, 0.32 B
One year dose from continuous exposure	947 TB	
70 year dose from continuous exposure	90,300 TB	
Dose from 1 day's intake of 1,000 cc water	1.6 ^(b) TB	
Dose from 1 day's intake of 2,200 cc water	3.6 TB	
Sr-90 ($t_{1/2}=28.8$) (17.5 years in bone)		
Activity ($\mu\text{Ci/cc}$)	1.1 x 10 ⁻⁴	1.0 x 10 ⁻⁵
Dose Estimates (mrem)		
NUREG-0683-2	960 ^(a) B, 19 TB	87 B, 1.8 TB
One year dose from continuous exposure	57,600 B	
70 year dose from continuous exposure	137,000,000 B	
Dose from 1 day's intake of 1,000 cc water	3,680 ^(b) B	
Dose from 1 day's intake of 2,200 cc water	8,090 B	

C-649

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

Radionuclide, (f_M), and (Effective Half-Life)	Base Case	Achievable Values
Ru-106 ($f_M=0.03$) (7.2 days in kidney)		
Activity ($\mu\text{Ci/cc}$)	$< 3.1 \times 10^{-6}$	
Dose Estimates (mrem)		
NUREG-0683-2	--	--
One year dose from continuous exposure	$< 12 \text{ K}$	
70 year dose from continuous exposure	$< 830 \text{ K}$	
Dose from 1 day's intake of 1,000 cc of water	$< 0.015 \text{ K}$	
Dose from 1 day's intake of 2,200 cc of water	$< 0.032 \text{ K}$	
Dose to GIT (LLI) from 1 year's continuous exposure	$< 47 \text{ GIT}$	
Ce-144 ($f_M=3 \times 10^{-4}$) (268 days in bone)		
Activity ($\mu\text{Ci/cc}$)	$< 1.8 \times 10^{-6}$	
Dose Estimates (mrem)		
NUREG-0683-2	--	--
One year dose from continuous exposure	$< 2.7 \text{ B}$	
70 year dose from continuous exposure	$< 532 \text{ B}$	
Dose from 1 day's intake of 1,000 cc of water	$< 0.010 \text{ B}$	
Dose from 1 day's intake of 2,200 cc of water	$< 0.021 \text{ B}$	
Dose to GIT (LLI) from 1 year's continuous exposure	$< 27 \text{ GIT}$	
Co-60 ($f_M=0.3$) (9.5 days in total body)		
Activity ($\mu\text{Ci/cc}$) GPU	4.8×10^{-7}	
Dose Estimates (mrem)		
NUREG-0683-2	--	--
One year dose from continuous exposure	1.67 TB	
70 year dose from continuous exposure	122 TB	
Dose from 1 day's intake of 1,000 cc of water	0.002 TB	
Dose from 1 day's intake of 2,200 cc of water	0.005 TB	
Dose to GIT (LLI) from 1 year's continuous exposure	1.44 GIT	

C-650

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

Radionuclide, ($t_{1/2}$), and (Effective Half-Life)	Base Case	Achievable Values
Pu-239 ($t_{1/2}=3 \times 10^5$) (72,000 days in bone)		
Activity ($\mu\text{Ci/cc}$) GPU	$< 1.4 \times 10^{-8}$ B	
Dose Estimates (mrem)		
NUREG-0683-2	--	--
One year dose from continuous exposure	< 0.24 B	
70 year dose from continuous exposure	< 1.098 B	
Dose from 1 day's intake of 1,000 cc of water	< 0.17 B	
Dose from 1 day's intake of 2,200 cc of water	< 0.38 B	
Dose to GIT (LLI) from 1 year's continuous exposure	< 0.07 GIT	
TB = total body B = bone K = kidney GIT(LLI) = gastro-intestinal tract (lower large intestine)		

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	These values are for an intake of 1,000 cc of the processed water. I don't know why the NRC staff used only one intake of 1,000 cc. The standard man consumes 2,200 cc per day, so I made these calculations obtaining 30 mrem for H-3 and 3.6 mrem to total body from Cs-137. Note that these values of one day's intake should be compared with the EPA limit of 4 mrem for drinking water. The equivalent EPA values for bone and kidney are $(30/5) \times 4 = 24$ mrem and $(15/5) \times 4 = 12$ mrem where 30 rem/y, 5 rem/y and 15 rem/y are the limiting dose rates for bone, total body and kidney, respectively, for the occupational worker. I looked at three radionuclides, Sr-90, Ca-144 and Pu-239 for which bone is often the critical body organ. Here it is noted that the values for Sr-90 (3,680 mrem from 1 day's intake of 1,000 cc or 8,090 mrem for 1 day's intake of 2,200 cc) far exceed the EPA equivalent limit of 24 mrem per year and most of this dose is in the first year after intake. The GPU provides no data for activities of Ru-106, Ca-144 or Pu-239 but their limit of detection is adequate for a single intake of 1,000 cc or 2,200 cc (i.e. 0.015 mrem and 0.032 mrem are < 12 mrem and 0.01 mrem, 0.021 mrem, 0.17 mrem and 0.38 mrem are less than the 24 mrem/year bone dose limit). It seems to me that an evaluation of the dose from one day's intake of 1,000 cc or 2,200 cc of processed water does not strike at the more meaningful evaluation of continuous intake of the processed water. For continuous intake for one year the doses are 10,600 mrem for H-3, 947 mrem for Cs-137, 57,600 mrem for Sr-90, < 12 mrem for Ru-106, < 2.7 mrem for Ca-144, < 1.67 mrem for Co-60 and < 0.24 mrem for Pu-239. Were a standard man to consume this water for 70 years at the projected level of contamination at discharge, the doses would be 770,000 mrem for H-3, 90,300 mrem for Cs-137, 137,000,000 mrem for Sr-90, < 830 mrem for Ru-106, < 532 mrem for Ca-144, 122 mrem for Co-60 and < 1,098 mrem for Pu-239. Thus it is seen that levels below the limit of GPU detection would be far in excess of a safe dose for consumption of the water for 70 years.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
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Finally, I looked at the dose to the GIT from one year's consumption of Ru-106, Ce-144, Co-60 and Pu-239. The values, respectively, are < 47 mrem, < 27 mrem, 1.44 mrem and < 0.07 mrem. Thus in all these cases the GIT is not the organ of highest dose.

In Conclusion

I believe that the studies made by GPU and by the NRC staff are woefully inadequate and much more data should be provided before deciding the best way to be rid of this problem, i.e. before deciding to let go of the bear we have by the tail.

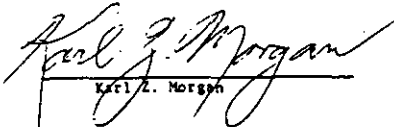

Karl Z. Morgan

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
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AppendixDose Rate

$$\begin{aligned}
 R(\text{mrem/year}) &= q(\mu\text{Ci}) \cdot 3.7 \times 10^4 (\text{dis/s } \mu\text{Ci}) \cdot \overline{\text{EQN}} (\text{MeV/dis} \times \text{rem/rad}) \\
 &\times 1.602 \times 10^{-6} (\text{erg/MeV}) \cdot 1/\text{m} (1/\text{g}) \cdot 10^3 (\text{mrem/mrad}) \times 3,600 \times 24 \times 365 (\text{s/y}) \\
 &\times 1/100 (\text{grad/erg}) = \frac{1.87 \times 10^7 \overline{\text{EQN}} q}{\text{m}} \text{ mrem/y} \quad (1)
 \end{aligned}$$

Dose from a Single Intake

$$D = \int_0^t R e^{-\lambda t} dt = R(1 - e^{-\lambda t}) = \frac{1.87 \times 10^7 \overline{\text{EQN}} q}{\text{m}} (1 - e^{-\lambda t}) \text{ mrem} \quad (2)$$

Dose from Continuous Intake

$$\begin{aligned}
 dq/dt + \lambda q &= P \\
 q &= \frac{P}{\lambda} (1 - e^{-\lambda t}) \\
 P &= A(\text{cc/y}) \cdot f_{\text{u}} \times C(\mu\text{Ci/cc}) = 2,200 (\text{cc/d}) \cdot 365 (\text{d/y}) \cdot f_{\text{u}} C \\
 &= 8.03 \times 10^5 f_{\text{u}} C \\
 D &= \int_0^t \frac{1.87 \times 10^7 \overline{\text{EQN}} \times 8.03 \times 10^5 f_{\text{u}} C}{\text{m} \lambda} (1 - e^{-\lambda t}) dt = \\
 D &= \frac{1.50 \times 10^{13} \overline{\text{EQN}} f_{\text{u}} C}{\text{m} \lambda} \left(t + \frac{e^{-\lambda t}}{\lambda} - \frac{1}{\lambda} \right) \text{ mrem} \quad (3)
 \end{aligned}$$

Dose from One Day's Intake after Exposure of t Years

$$\begin{aligned}
 q_1 &= 2,200 f_{\text{u}} C \\
 D &= \int_0^t \frac{1.87 \times 10^7 \overline{\text{EQN}} 2,200 f_{\text{u}} C e^{-\lambda t}}{\text{m}} dt
 \end{aligned}$$

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	$D = \frac{4.11 \times 10^{10} \overline{EQN} f_w C (1 - e^{-\lambda t})}{\lambda} \text{ mrem} \quad (4)$	
	$D = \frac{4.11 \times 10^{10} \overline{EQN} f_w C}{\lambda} \text{ mrem for } t \rightarrow \infty \quad (4)$	
	<u>Dose to Lower G.T. Tract (Colon) from One Year's Continuous Exposure at ICRP-2 MPC Level</u> (MPC)_{LLI}^{168 h/w} corresponds to R = 15,000 mrem/y dose rate when exposure time, t, is >> 18 hours	
	$D_1 = \frac{C \times 1,500}{(\text{MPC})_{\text{LLI}}^{168}} \text{ mrem} \quad (5)$	

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

Attachment 6

Second Set of Comments Relative to Treatment and
Disposal of 2,100,000 gal. of Contaminated Water

at TNH-2

by

Karl Z. Morgan

March 2, 1988

Follow Up Comments

First of all I wish to state that I stand by my comments in my earlier report on this subject dated March 19, 1987 and wish now to respond to a criticism of that report and bring this discussion up to date. At the outset also I would like to make it clear that I offer these comments, not as a paid consultant, but as a citizen interested in the long term genetic and somatic health of persons living in this community, i.e. I am accepting no payment for the time and effort I am spending on this case.

The only criticism I have seen of my report of March 19, 1987 is that my calculations of dose are based on values of body uptake, distribution, retention and energy distribution given in ICRP-2 (1959) rather than data given in ICRP-30 (1981). It is true that this use of earlier data has in general led to higher estimates of dose for some of the radionuclides such as Sr-90 but has had little effect for such radionuclides as H-3. However, I deliberately made use, for the most part, of the data in this earlier report because I believe they are more representative of man for two reasons, 1) The data in ICRP-2 are more representative of the average person in the community and 2) The data in ICRP-30 are a selected set of data by current members of ICRP who have a conflict of interest because of their association in the nuclear industry.

It is well established that for most of the radionuclides the dose from a given environmental exposure is greater for children and for females. The early

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

data made use of information from a variety of sources--old, young, male, female, human, animal, etc. The more recent ICRP-30 data apply more strongly to the adult working male.

There is no question but that a conflict of interest has led to a selection of biological and physical parameters that guarantees a lowering of the estimated dose to body organs from incorporation of the radionuclides in case of the more important exposures. I pointed to some of this defect in present membership of ICRP in a recent publication (Radiation and Health by R.R. Jones and R. Southwood, chapter 11, "ICRP Risk Estimates--An Alternative View," by K.Z. Morgan, J. Wiley & Sons, 1987). The following table is copied from this publication. Here we have the startling observation that all values for greatest concern in our case (H-3, C-14, Cs-137, Sr-90, Ru-106, Ce-144, Co-60, Pu-239 and I-129) are larger in ICRP-30 than in ICRP-2. These increases are not by accident but by design. As one of the three emeritus members of ICRP I objected to the direction ICRP was taking but all to no avail. I could not condone a policy of ICRP to increase the allowable values of maximum permissible concentration, MPC, in air, water and food at a time when all of us recognized new data were showing that the risk of radiation induced cancer is much greater than we thought it to be when ICRP-2 was published. This trend, however, began in the last five years before I was voted out as an active member of ICRP. There had been strong opposition by some members of ICRP to the so-called ten day rule to limit diagnostic X-ray exposure in the pelvic and abdominal region of young women except during the ten day interval following menstruation and we had a long squabble over the fact that ICRP-2 had set the quality factor for low energy beta radiation (such as that from H-3) at 1.8. Dr. H. J. Muller (the world famous geneticist) and I won out in a battle for the 10 day rule but I lost out on a higher

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
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value of Q for low energy beta radiation. Some of us had gathered biological data indicating the value of Q probably should be no lower than five and I had physical data indicating the stopping power dE/dx of low energy betas was similar to that of alpha radiation. Today ICRP sets $Q=20$ for alpha and neutron radiation but the year I left active ICRP membership (1971) the Q for low energy beta was dropped to 1.0. One member of ICRP even used the argument that we should not raise the value of Q for low energy beta radiation because it would hamper production of nuclear weapons.

I believe all the above is rather pertinent to our case here for were we to set the $Q=20$ for the H-3 beta (the value for alpha) the dose estimates we arrive at for H-3 would be increased by a factor of 20.

There are other reasons also for concern for the dose from H-3. Hydrogen is a basic constituent in the nucleus of the living cell. Tricited thymidine ($C_{10}^3H_{14}N_2O_5$) in the DNA undergoes two dramatic events when the H-3 gives off a beta. First, recoil energy might break or rearrange chromosomes in the nucleus of a cell and second, when the hydrogen atom gives off a beta particle, it is transmuted to a helium atom (${}^3_1H \rightarrow {}^3_2He$). These events could be especially serious in the human ovum or sperm cell prior to or shortly after meiosis of the chromosome. It takes many generations in a human population to measure the full extent of such genetic changes but perhaps (and unfortunately) the large increase of H-3 in the human environment may visit serious consequences on children yet to be born. Fortunately the half life of H-3 is only 12.26 years. However, C-14 has a half life of 5,730 years and much of what is said above regarding H-3 applies to C-14 and its low energy beta. In this case we are concerned with the transmutation of a carbon atom in one of the chromosomes to a nitrogen atom, i.e. ${}^{14}_6C \rightarrow {}^1_0B + {}^{14}_7N$.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	Another reason for uneasiness and concern about the release of steam and water droplets containing H-3 into the environment via the open cycle evaporation method is that $^3\text{H}_2\text{O}$ is considered to be 100 times more hazardous than $^3\text{H}_2$ and studies of $^3\text{H}_2\text{O}$ have shown man absorbs the same amount through the skin as via inhalation. Ever since ICRP-30 and ICRP-26 (1977) came into print I have fought against increasing the MPC values but it has been a losing battle--recently NCRP, NRC and EPA succumbed to pressure from the nuclear industry. I attach a copy of my comments on the proposal of the NRC to adopt ICRP-26 and ICRP-30 in Part II Title 10 Part 20 submitted March 27, 1986. For the past 10 years I have been publishing papers showing why the cancer risk estimate of one radiation induced cancer death per 10,000 person rem (10^{-4} cd/pr) is too low and should not be less than one per 1,000 person rem (10^{-3} cd/pr). The ICRP, NCRP, UNSCEAR, NRC, DOE, EPA, etc., however, have been adamant and have persisted in using 10^{-4} cd/pr. Last year all these agencies took a terrific blow and are now in the process of eating crow. This low figure of 10^{-4} cd/pr is based on early data from survivors of the atomic bombings of Hiroshima and Nagasaki and a publication from the Japanese research group (D. L. Preston and D. A. Pierce, RERF TR-9-87) struck like a thunderbolt to their smugness. At its Como, Italy meeting last fall the ICRP stated that this publication required an increase by a factor of 2.8 in the cancer risk estimate and went on to say "Substantially larger changes in the Commission's present risk estimates for cancer induction would, however, result from two further factors." These two factors are, 1) change from the use of an absolute risk to a relative risk model and 2) change in the shape of the dose response curve. In spite of these humbling admissions, the ICRP concluded "Since the risk data are yet far	

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

Table 3. Comparison of ICRP-30 with ICRP-2 values

Radio- nuclide	Half-life	ICRP-30 DAC (Bq/m ³) MPC, GCRCh	ICRP-2 MPC, GCRCh	ICRP-30 ^a ALI (Bq) MPC, GCRCh	ICRP-2 MPC, GCRCh
H-3 (D)	12.36y	8×10^7 (2.2×10^{-1})	1×10^8 (0.1)	1×10^8 (0.3)	
C-14 (CO)	5730y	3×10^6 (8.3×10^{-1})	4×10^6 (1×10^{-1})	9×10^6 (2×10^{-1})	
Na-24	14.96h	8×10^7 (2.2×10^{-1})	10^8 (10^{-1})	10^8 (10^{-1})	
P-32	14.28d	6×10^7 (1.6×10^{-1})	7×10^7 (2×10^{-1})	7×10^7 (2×10^{-1})	
S-35	87.9h	3×10^7 (8.3×10^{-1})	3×10^7 (10^{-1})	3×10^7 (10^{-1})	
Cl-36	3.1×10^5 y	4×10^7 (1.1×10^{-1})	1×10^8 (10^{-1})	1×10^8 (10^{-1})	
Ca-45	165d	1×10^7 (2.7×10^{-1})	1×10^7 (10^{-1})	1×10^7 (10^{-1})	
Cr-51	27.8d	3×10^7 (8.3×10^{-1})	3×10^7 (10^{-1})	3×10^7 (10^{-1})	
Mn-54	300d	1×10^7 (2.7×10^{-1})	1×10^7 (10^{-1})	1×10^7 (10^{-1})	
Fe-55	2.6y	6×10^7 (1.6×10^{-1})	6×10^7 (10^{-1})	6×10^7 (10^{-1})	
Fe-59	45.6d	8×10^7 (2.2×10^{-1})	1×10^8 (10^{-1})	1×10^8 (10^{-1})	
Co-58	71.3d	1×10^7 (2.7×10^{-1})	1×10^7 (10^{-1})	1×10^7 (10^{-1})	
Co-60	5.26y	500 (1.4×10^{-1})	500 (10^{-1})	500 (10^{-1})	
Ni-59	8×10^5 y	3×10^7 (8.3×10^{-1})	3×10^7 (10^{-1})	3×10^7 (10^{-1})	
Cu-64	12.6h	3×10^7 (8.3×10^{-1})	3×10^7 (10^{-1})	3×10^7 (10^{-1})	
Zn-65	245d	4×10^7 (1.1×10^{-1})	4×10^7 (10^{-1})	4×10^7 (10^{-1})	
Sr-89	52.7d	2×10^7 (5.4×10^{-1})	2×10^7 (10^{-1})	2×10^7 (10^{-1})	
Sr-90	27.7y	60 (1.6×10^{-1})	10^2 (10^{-1})	10^2 (10^{-1})	
Mo-99	66.7h	2×10^7 (5.4×10^{-1})	2×10^7 (10^{-1})	2×10^7 (10^{-1})	
Ru-106	360d	200 (5.4×10^{-1})	200 (10^{-1})	200 (10^{-1})	
Tc-127m	100d	4×10^7 (1.1×10^{-1})	4×10^7 (10^{-1})	4×10^7 (10^{-1})	
I-136	2.6h	1×10^7 (2.7×10^{-1})	1×10^7 (10^{-1})	1×10^7 (10^{-1})	
I-129	1.7×10^7 y	100 (2.7×10^{-1})	100 (10^{-1})	100 (10^{-1})	
I-131	8.05d	700 (1.9×10^{-1})	700 (10^{-1})	700 (10^{-1})	

^a Class W only
^b Value given in ICRP-6 (1982).

Table 3. Continued

Radio- nuclide	Half-life	ICRP-30 DAC (Bq/m ³) MPC, GCRCh	ICRP-2 MPC, GCRCh	ICRP-30 ^a ALI (Bq) MPC, GCRCh	ICRP-2 MPC, GCRCh
I-132	2.28h	1×10^7 (2.7×10^{-1})	1×10^7 (10^{-1})	10^8 (10^{-1})	
I-133	20.8h	4×10^6 (1.1×10^{-1})	1×10^6 (10^{-1})	1×10^6 (10^{-1})	
I-135	6.68h	2×10^6 (5.4×10^{-1})	10^6 (10^{-1})	1×10^6 (10^{-1})	
Xe-133	5.27d	4×10^6 (1.1×10^{-1})	10^6 (10^{-1})	1×10^6 (10^{-1})	
Cs-134	2.06y	2×10^6 (5.4×10^{-1})	10^6 (10^{-1})	1×10^6 (10^{-1})	
Cs-137	30.0y	2×10^6 (5.4×10^{-1})	10^6 (10^{-1})	1×10^6 (10^{-1})	
Ba-140	12.8d	2×10^6 (5.4×10^{-1})	10^6 (10^{-1})	1×10^6 (10^{-1})	
Ce-144	284d	200 (5.4×10^{-1})	10^6 (10^{-1})	1×10^6 (10^{-1})	
Ir-192	74.3d	3×10^6 (8.3×10^{-1})	1×10^6 (10^{-1})	1×10^6 (10^{-1})	
Po-210	138.4d	10 (2.7×10^{-1})	1×10^6 (10^{-1})	1×10^6 (10^{-1})	
Ra-226	1602y	10 (2.7×10^{-1})	1×10^6 (10^{-1})	1×10^6 (10^{-1})	
Th-232	1.41×10^{10} y	1×10^6 (2.7×10^{-1})	1×10^6 (10^{-1})	1×10^6 (10^{-1})	
U-234	2.47×10^5 y	6×10^5 (1.6×10^{-1})	10^6 (10^{-1})	1×10^6 (10^{-1})	
U-235	7.1×10^8 y	8×10^5 (2.2×10^{-1})	10^6 (10^{-1})	1×10^6 (10^{-1})	
U-238	4.51×10^9 y	7×10^5 (1.9×10^{-1})	10^6 (10^{-1})	1×10^6 (10^{-1})	
Np-237	2.14×10^6 y	9×10^4 (2.4×10^{-1})	1×10^6 (10^{-1})	1×10^6 (10^{-1})	
Pu-238	86.4y	1×10^4 (2.7×10^{-1})	1×10^6 (10^{-1})	1×10^6 (10^{-1})	
Pu-239	24360y	2×10^4 (5.4×10^{-1})	1×10^6 (10^{-1})	1×10^6 (10^{-1})	
Pu-240	6500y	2×10^4 (5.4×10^{-1})	1×10^6 (10^{-1})	1×10^6 (10^{-1})	
Am-241	458y	8×10^3 (2.2×10^{-1})	1×10^6 (10^{-1})	1×10^6 (10^{-1})	
Am-243	7.5×10^4 y	3×10^3 (8.3×10^{-1})	1×10^6 (10^{-1})	1×10^6 (10^{-1})	
Cm-244	17.6y	2×10^3 (5.4×10^{-1})	1×10^6 (10^{-1})	1×10^6 (10^{-1})	

^a Class W only
^b Value given in ICRP-6 (1982).

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	from conclusive, the Commission will await the result of the comprehensive evaluations of its sources of epidemiological information that are currently being made, before judging the consequences for the revision of its system of dose limitation." Amazing! Let's wait and count more bodies before doing something that might jolt the nuclear industry. I am still for the proper development of the nuclear industry but not at an unacceptable cost in suffering and human life. If I could have made the choice in the early period, I would have opted for renewable sources of energy but now it is too late and I would like to make the best of what we have by trying to shut down the power reactors with a poor operating record and increasing the safety of those remaining on line. Fortunately in the UK they are not waiting to count more bodies and have announced the intention of an immediate reduction in levels of exposure to ionizing radiation by a factor of three and perhaps additional reductions at a later date. Finally and in conclusion, I believe the doses would now be found to be larger for the open cycle evaporation method than I calculated in my March 19, 1987 report were I to take account of all the factors discussed above. In that report I suggested three methods of closed cycle evaporation that would greatly reduce the radiation hazards at a relatively low cost and I believe these methods should be carefully studied before embarking on an open cycle method that does not conform with ALARA and does not meet provisions of the NRC numerical guide in 10 CFR 50 of 3 mrem per reactor year to the total body from all pathways for liquid effluents or 5 mrem per reactor year to the total body of an individual for gaseous effluents.	

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

Attachment 7

**Third Set of Comments Relative to Treatment
and Disposal of 2,100,000 Gal of Contaminated Water
at TMI-2**

by
Karl Z. Morgan
September 30, 1988

**A. Historical-Factors Leading to Conclusion That the Licensee is Not
Capable of Evaporating the TMI-2 Contaminated Water in a Safe Manner**

- ✓ 1. The Amount of Contaminated Water is Unknown and is Likely to Exceed 2.1×10^6 gal.
 - a. Reports have given the amount of this water as 2.1×10^6 , 2.2×10^6 and 2.3×10^6 gal.
 - b. From my own experience in cleanup operations in Oak Ridge, Tenn. I have found the contaminated water almost always exceeds the estimates in spite of efforts to keep it to a minimum.

- ✓ 2. The Quantity of H-3, the Principal Radionuclide in Terms of Activity (& μ Cts) to Be Released to the Environment, is Unknown and Given Erroneously.

- a. The following values are given .07, 0.13, 0.19 and 2.1μ Ci/ml. This is a range of 30 in the amount of H-3 and in the associated dose to members of the public.

I recognize that it is difficult to make an accurate theoretical estimate of the H-3 present from the MW-hrs., the β in the reactor as a function of time and from information on other stable elements in the primary and secondary water systems but proper sampling techniques certainly should reduce the uncertainty to less than a few

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	percent and not 3,000%!	
	I recognize that although H-3 in the PWR is produced principally by the ^{235}U (fission) ^3H + other f p's, $^{10}\text{B} + \text{N}$ $^9\text{Be} + ^3\text{H} + 0.2\text{MeV}$, $^{11}\text{B} + \text{N}$ $^9\text{Be} + ^3\text{H} + 9.6\text{MeV}$, $^{10}\text{B} + \text{N}$ $^2 + ^3\text{H}$ and $^{10}\text{B} + \text{N}$ $^7\text{Li} + \text{N} + ^3\text{H}$, there are many other reactions contributing to H-3 production such as $^2\text{H} + \text{N}$ ^3H , $^{14}\text{N} + \text{N}$ $^{12}\text{C} + ^3\text{H}$, $^1\text{H} + \text{N}$ $^2\text{H} (^2\text{H} + \text{N} ^3\text{H})$, $^6\text{Li} + \text{N}$ $^3\text{H} + 4.69\text{MeV}$. It is for this reason I always give more credence to properly conducted sampling rather than to theoretical estimates. Why such poor sampling?	
	X3. The Quantity of Other Radionuclides in the Processed Water (Just Before Evaporation) Has Not Been Determined with Sufficient Accuracy.	
	For Example (Sb-125 is given as 6.2×10^{-7} and $< 1.1 \times 10^{-7}$) - <i>Just 2</i> $\mu\text{Ci/ml}$, Cs-137 as 800×10^{-8} and 7.6×10^{-8} $\mu\text{Ci/ml}$, Co-60 as 32×10^{-8} and 8.4×10^{-8} $\mu\text{Ci/ml}$, Pu239/240 as 3.7×10^{-8} and $< 1.2 \times 10^{-8}$ $\mu\text{Ci/ml}$, C-14 as 3000×10^{-7} and 2.3×10^{-7} $\mu\text{Ci/ml}$, Tc-99 as 25.0×10^{-8} and 1.6×10^{-8} $\mu\text{Ci/ml}$. I consider these uncertainties as serious. Cs-137 and Co-60 are among the more important gamma emitters (external dose) in the evaporator bottoms and the residuals of the SDS and EPICOR-II processing before the evaporation so a difference of the Cs-137 dose by a factor of > 100 and of the Co-60 dose by a factor of 4 is of great consequence in terms of occupational exposure and exposure during transportation operations. The Pu risks will be around for hundreds of thousands of years and so a difference by a factor of 3 is very significant. The C-14 is considered by some experts as a principal environment	

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Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	3 hazard of nuclear power operations yet the estimate of C-14 differ by a factor of 1300! As one of the scientists who has tried to make nuclear energy and its product nuclear power acceptably safe during the past 45 years, I feel a bit insulted by any organization that suggests uncertainties of the occupational and environmental radiation hazards of the above magnitude should be acceptable 4. Both the Licensee and the NRC Have Left a Record That Cast Doubt on Their Sincerity when They State They Give High Priority to Safety and Conformance to ALARA. The public record of the licensee is well established and need not be elaborated here. The attitude of the NRC and its senior staff toward radiation safety is exemplified in a letter I wrote to the chairman of NRC (see Appendix A) which, by the way, was never answered. To me it is incredible that an organization such as the NRC claims its policy is to conform with ALARA while at the same time it blindly accepts recommendations of ICRP to increase levels of maximum permissible air concentration (MPC) of radionuclides such as H-3 by a factor of 4.4, 20 for C-14, 1.5 for Co-60, 1.4 for 1.7×10^7 y I-129, 2.1 for I-131 5.4 for Cs-137, 2.7 for Pu-239, etc and increases values in water (MPC)_w such as H-3 by a factor of 3, 2.0 for Co-60 2.0 for I-129, 1.7 for I-13, 2.0 for Pu-239, etc. (see Appendix B, Table 3) Also, I consider it incongruous that the NRC like the ICRP, has not lowered the level of maximum permissible exposure to external sources of ionizing radiation, MPE by at least a	

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

4

factor of 3. The present MPE and values recommended in BEIR-III are based on the risk of radiation induced cancer as determined by studies of survivors of the atomic bombings of Hiroshima and Nagasaki. Those doing these studies have recently published papers showing this risk is greater at least by a factor of 3 than previously published values. The British have lowered their MPE by a factor of 3 (see Appendix C) with indications additional reductions may follow. Why is the NRC stalling?

The table below gives values of radiation induced cancer.

Comparative Values of Cancer Risk

Source	Cancers/Person Absolute Model	rem by Relative Model
BEIR-1972	1.15×10^{-4}	5.68×10^{-4}
UNSCEAR-1977	$(0.75-1.75) \times 10^{-4}$	
ICRP-1977	$(1.0-1.25) \times 10^{-4}$	
NRC-1981	1.35×10^{-4}	5.4×10^{-4}
Recent Japan Studies-1988	$(4-8) \times 10^{-4}$	$(1.6-3.2) \times 10^{-3}$

5. The Licensee Does Not Propose the Use of the Most Recently Developed and Recommended Instrumentation and Environmental Monitoring Procedures in Order to Comply with ALARA.

A number of improvements in instrumentation, techniques and operating procedures are recommended in the Environmental Monitoring Report prepared by Dr. Ruth Patrick of the Philadelphia Academy of Natural Sciences, Prof. John Palms, Vice Pres. of Emory University, et al for

C-665

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	5	
	the TMI Public Health Fund. Especially pertinent are some of sections in Appendix F of this TMI-PHF report (See Appendix D). It is unthinkable that the NRC has not considered monitoring of wells and springs.	
	6. The GPU Staff and the NRC Do Not Make it Clear Which Waste Water Will Be Treated or If Any Pretreatment is Now Planned.	
	There are many sources of contaminated water evolving from the TMI-2 cleanup. Because of uncertainties and risk of mistakes, I believe these water sources (other than the sanitary sewer) should not be separated and treated differently -- they should all be treated by the SDS and EPICOR-II system; each of course with the necessary preparatory treatment.	
	In some responses it is stated the water will be treated by both the SDS and EPICOR-II systems (e.g. R-NRC Staff Response dated Feb. 22, 1986, page 4) In other responses, however just the contrary is stated (e.g. GPU ID 0068P, Feb. 3, 1987, page 1). What are we to believe? I believe the problem of uncertainty in concentration of the various radionuclides is not with the analyses in most cases but with the extremely poor and definitely unacceptable method employed by the licensee in providing representative water samples.	
	7. The NRC Staff Demonstrates a Warped or Seriously Distorted Understanding of the Risk from the Transuranic Radionuclides.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	6 Page 7 of the NRC Staff Response to Interrogatories from TMI/SVA of Feb. 22, 1988 states, "However from the results of the analysis of PWST-2 (see response 2 above) transuramics make up less than 1% of the total curie content of ABW as they do in Table 2.2 of Supplement No. 2 as well." NRC Staff would console us about their lack of serious consideration of the transuramics in the ABW because on a curie or activity basis they comprise less than 1%. To me this is absurd. Essentially all the curies in Table 2.2 (i.e. 1020/1021.2 or 99.88%) consist of H-3. However the relative cancer risk of Pu-239 to that of H-3 as given by the ratio of the inverses of (MPC)s for the two radionuclides is $5 \times 10^{-6} / 2 \times 10^{-12} = 2,500,000$. In other words one would want the content (curies) of the transuramics to be 0.0004% rather than 1% for the risks to be comparable. Furthermore, there are many publications showing the (MPC)s for Pu-239 is far to large. 8. The Licensee and NRC Appear Not to Be Giving Serious Consideration to the Modifications I Have Suggested to the Vaporation Method. See Recommendations dated March 19, 1987 and March 2, 1988. 9. The EIS Fails to Comply with Requirements of the NEPA (see SVA/TMIA's Response June 20, 1988) 10. There Has Not Been Provided Convincing Evidence That the	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	Evaporator Method as Proposed Will Provide an Overall Decantamination Factor of 1000. Problems associated with liquid transfer, spillage, accidents, shut-down, equipment failure, sabotage, explosion reduced efficiency, etc. have not been given thorough consideration.	
	11. The Need for a Biological Effectiveness Factor Greater Than 1 for Low Energy Beta Radiation Has Not Been Recognized. Toward the end of their tracks electrons or beta particles have a very high specific ionization or stopping power, dE/dx, and thus approach alpha and fast neutron particle values of RBE. The ICRP now sets the RBE of alpha and fast neutrons at 20. Many studies indicate the RBE for low energy beta radiation such as that from H-3 and C-14 is greater than 1 and may be as high as 5. In other words, this factor alone would indicate an underestimate of the population dose and the concomitant risks of radiation induced malignancies and genetic defects by a factor as much as 5.	
	12. It is Unrealistic to Assume That C-14, I-129 and Cs-137 Will Be Removed Completely by the Proposed Evaporation System. This must be proven by experiments which have never been done and one must not rely on theory.	
	13. The Evaporation System of 1/5 gal/min Would Take 319 Days of Continuous Operation with No Shut Down and	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	Perfect Operation. This is too long to hold a tiger by the tail! Actually the operation probably would take over 2 years under the most favorable circumstances. With the modifications I have suggested, it would take much longer.	
	14. Neither the Licensee Nor the NRC Seem to Know What the Natural Background Radiation Is in the Local Area. The Licensee gives the background as 300 mrem/year and the NRC gives it as ¹⁷⁰ mrem/year. This is the starting point in determining the added radiation risk and accurate values must be provided area-wide for this. This information is essential for those writing the last chapter and the conclusion of Who Done It!	
	15. The Licensee and the NRC Have Consistently Underestimated Both the Occupational and Public Radiation Dose and Risk of Radiation Induced Malignancies and of Genetic Defects. See my comments dated March 19, 1987 and March 1988 and Appendices B and C. It should be appreciated that since both H-3 and C-14 deposit in the gonads and in DNA and RNA, they are a genetic risk to children yet to be born a thousand years from now. Because of the reactions $^3\text{H} \rightarrow ^3\text{He}$ and $^{14}\text{C} \rightarrow ^{14}\text{N}$, one of the 46 chromosomes in a germ cell of a hom sapien can end up suddenly with a hydrogen atom replaced by a helium atom of gas or a carbon atom may be replaced by a nitrogen atom.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
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9

8. Present Opinion Regarding Disposal of Contaminated Water at

TMI-2

Because of the above and other facts I have concluded that all plans for the evaporation procedure should be abandoned. I believe, as indicated above, that all the contaminated water should be treated by the SOS and EPICOR-II Systems following appropriate pretreatment. The solid or slurry residue from these treatments should be sized, mixed with cement in 55 gal. drums and sent to a licensed burial ground, e.g. Hanford. The contaminated water should be placed temporarily in large holding tanks. Other pretreatments, ion exchange chemical strips and better systems that are effective in removing stable baron and more of the radionuclides should be investigated and applied where feasible.

The holding tanks should be so installed and located that any leakage is known with absolute certainty to drain into a sampling sump tank. Great care must be taken to prevent any explosive materials entering the tanks via sabotage or otherwise. Under no conditions should cement, solidifying or coagulating materials be placed in these tanks. It is likely plans will be undertaken to remove this contaminated water at a later date and we do not wish to be confronted then with problems such as those that stalled and dunted operations at West Valley.

9. Recommended Future Course of Action Ultimately, it will be

desirable to drain the tanks of the 2.1×10^6 plus gallons of contaminated water. Most of the activity (curies) in the tanks will be that of H-3. Various estimates of the H-3 activity are provided us but if the initial level is 1000 Ci, the drop off in time of H₃, Cs-137, Sr-90 and Pu-239 will be as follows,

C-670

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
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10

Time(y)	H-3 Ci	Cs-137Ci	Sr-90Ci	Pu-239 μ Ci
0	1000	0.03	0.08	300
1	945	0.029	0.078	300
10	568	0.028	0.062	300
30	184	0.015	0.038	300
50	59	0.009	0.023	300
100	3.5	0.003	0.007	299
200	0.012	0.0003	0.0005	298
300	0.00004	0.00005	0.00004	297
20,000	0	0	0	169
1,000,000	0	0	0	18

Since most of the initial activity is that of H-3 (HL=12.262 y), the above column 2 represents the total activity in the tanks as well as that of H-3 until about 300 years when the CS-137, Sr-90 and H-3 activities are all about equal. After 200 years the Pu-239 activity is about equal to that of Cs-137 and Sr-90. The Pu-239 activity predominates and is significant after 20,000 years when it consists of 125,000 maximum permissible body burdens for a member of the public (i.e. 0.0013 μ Ci).

Many factors and circumstances will determine how long the contaminated water should remain in the tanks. It would seem to me, however, 30 years might be reasonable. With proper adjustment of pH the tanks should not leak in this time while the activity of H-3 will have dropped to 18.4% and that of Cs-137 and Sr-90 to about 50%. If over this time a 5000 gal. tank gave indication of leakage its contents could be mixed with concrete as it is emptied into about 100 55 gal. drums and then shipped to a state operated medium level repository.

D. Concluding Comment

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
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11

I appreciate very much the value of having an Atomic Safety and Licensing Board, ASLB, and for several years I served on a NRC committee to recommend memberships on these ASLB's. For the most part I believe members of these Boards strive to be impartial but in many cases they have a conflict of interest and I believe the selection process should be modified to minimize this conflict. It would seem that membership on these Boards should reflect as equally as possible the views and goals of the public living near the nuclear power plant as well as views of the nuclear utility. I am not convinced that this is always the case.

On another point, I believe the method of financing the ASLB hearings should be improved. Members of ASLB and their consultants and the NRC staff are paid by the NRC and there should be some arrangement by which members of the public and their organizations that contest plans of the utility that affect them can be paid a fee and have coverage of their expenses. Some years ago (just a few days before I had to rush home to testify before Senator Kennedy in a Congressional hearing regarding consequences of the TMI-2 accident) I testified in the Gorelieben Hearings against a proposed method of the West Germans to dispose of radioactive waste in dome salt. It was my impression that both sides of this controversy were financed by the W. German government. Why can't we in the U.S. be as democratic as the W. Germans? Because I know we have no such system in the U.S. and some members and organizations of the local community are striving so nobly for their Constitutional rights I have not asked to be paid and will not request payment for many days I have spent in preparation for these hearings; this in spite of the fact my sole business and livelihood is that of consulting in health physics and defending in our courts

C-672

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

12

plaintiffs who have evidence of injury from excessive exposure to ionizing radiation.

This is not a criticism of the present ASLB but a plea that the NRC will try to make this process more democratic and fair to the heroic members of the public that try to make this democratic process a useful and successful operation even though most of those in this community and in other communities where I have intervened relative to nuclear utility proposals believe there is much room for improvement of this process.

Respectfully Submitted

Karl Z. Morgan

C-673

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-16	STATEMENT OF LESLIE HARRIS	
	MS. HARRIS: I'm Leslie Harris and I am involved with the Sierra Club. I am not necessarily representing them; I'm just a patriotic citizen.	
C-16-01	My main concern is the safety deficiencies at the Savannah River Site and that it not be restarted before safety improvements, upgrades, and modifications are made. We need to have these made before the startup, not after, preferably not restarted at all and use that money to start cleaning up that mess down there. It's going to take decades. That would keep the people busy who are concerned about jobs in that area. They could clean it up. There is no final destination for this waste that they have already made. I can't see making any more in today's world where we are all worried about drinking water and planet Earth. No more contamination to this environment. Let's try and have more positive vision of our future and give peace a chance. Stop the restart. Thank you.	Please see the responses to Comments C-01-02 on safety and C-05-03 on waste management and environmental restoration.

C-674

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-17	STATEMENT OF CORRY E. MASON	
C-17-01	MR. MASON: These hearings at least up till now have been a farce. We all would like to be out pursuing and getting on with our lives... but noooo..... we are continuously having to drag ourselves down here to these hearing that don't seem to hear, because we feel we must. What has been confirmed to me so far is that the Government is no longer a democracy but a "lacky" for big business with a tenacious, smoothly, contrived coup of a dictatorship with its tenacles wrapped around most everything in a most suppressive manner. Media censorship, for instance.* At these past open hearings, virtually everyone spoke out against the Savannah River bomb plant yet Strom Thurmond rises to say South Carolinians want the thing back on line. Give me a break! George Bush comes down here to give us a false feeling of recognition when in reality we are but a convient third-world 'chumps', with perhaps a psychotic man seating in the Governor's Seat throughly entrenched in the camp of the minority group that has taken the helm of power. South Carolinians have been duped, brain washed, coerced into becoming little more than cattle waiting for their gruel at the trough. Tho the rest of the Nation is not so far behind, at least they can and do console themselves with 'better them then us'. And all know that the Government and business have all the guns, money, lawyers, and power and are bullies anyway. Throughout the world the U.S. is despised. (It is not for nothing). If every country the world over rid itself of its nuclear arsenal, you will never convince me that I would still not have to drag myself down here and testify that you SRS and the Government have become the very agents of what you were supposed to protect us from in the first place. I don't know if all the policy makers are just plain stupid or evil or if there's any difference between the two. The people involved in SRS have clearly lost any intuitive reasoning and are 'locked' in denial. SRS, you are not nice people. Go look in the mirror one more time maybe you'll finally see. The fact that there is mounting evidence that the radiation routinely released eats the Ozone has not seemed to cause pause. Living with you, SRS, has been about as much fun as living next door to a house full of sacrificing Satan worshipors. The key is in your hands, and you clearly want to drive. And you have clearly become addicted to plutonium and tritium, and you are clearly "bombed-out of you minds.	Comments noted.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-18	STATEMENT OF PETER C. SEDERBERG, USC	
C-18-01	I have appeared before two previous DOE panels soliciting comment on the operations of the reactors—current and planned—at the Savannah River Site. On these occasions, I shared my concerns about the projects of the Department of Energy. My expertise does not lie in the technical requirements of nuclear reactors nor in the health and environmental consequences of their operation. The Savannah River reactors, however, present something more than an engineering problem; they are, rather, fundamentally a political problem. In the area of nuclear politics, I do claim some understanding. Consequently, in previous testimony, I critiqued the nuclear strategy underlying the supposed need for the continued production of nuclear materials, and I suggested that a complete EIS should include a study of the impact of a nuclear attack on the Savannah River Site. Not surprisingly, neither of my observations is addressed in this EIS.	Please see the response to Comment C-01-01 on the need for tritium and other nuclear materials. The consequences of a nuclear attack on SRS are beyond the scope of this EIS.
C-18-02	Underlying the compulsion to restart contained in the EIS is an assumption concerning the requirements of our nuclear deterrent as defined in the Nuclear Weapons Stockpile Memorandum of January 1989. The particulars are, of course, classified, but one does have to be an admiral to surmise that the NWSM continues a commitment to maintaining, and probably increasing, a stockpile of weapons that reflects the inertia of our government's continued commitment to a nuclear war fighting strategy. Only the pursuit of the chimera of a "limited, protracted" nuclear war fighting capability requires the fantastic numbers of nuclear weapons currently held or contemplated. Because of this fantasy, the people of South Carolina are once again asked to assume the costs and risks of reactor operation. The only encouragement I take from this Statement is that it contains several comments indicating at least some recognition that strategic requirements, as currently defined, could change (but, oh no, not yet).	DOE is required by law to produce defense materials as ordered by the President in the Nuclear Weapons Stockpile Memorandum (July 1990) and specifically authorized by the Congress. As discussed in Section 1.2 of the EIS, when the changing geopolitical situation leads the President and the Congress to direct a reduction in weapons requirements or a stop in the production of these materials, DOE will comply with those directions.
C-18-03	This position might seem prudent, except it assumes that our 22,500 nuclear weapons make sense in the first place. If what we are trying to do is deter a nuclear attack on our country, then these numbers are far in excess of what we need by at least a factor of 10. None of the proponents of the nuclear war fighting alternative has been able to develop a convincing case how a war	The need for nuclear weapons is beyond the scope of this EIS.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	involving the exchange of thousands of warheads could be termed limited in any meaningful sense or controlled once it broke out. What we have developed over the past forty years is a vast destructive power that resists subordination to political purpose and weapons, like the B 2 bomber, that serve no credible military mission.	
C-18-04	On the other hand, since the EIS buys into this war fighting doctrine, it is incomplete, for it fails to outline the environmental effects of nuclear strike on the Savannah reactors. The weapons will, after all, fly both ways. We are confronted with evaluations of the effects of reactor accidents, fires, seismic events, aircraft impact, waterway accidents, and so on. Indeed, probabilities have been calculated for most of these risks. Did the authors of the EIS consider the chance of a nuclear attack to be so small, as to not warrant ANY consideration. The chance of a airplane striking a reactor in any year is calculated at 1.5×10^{-8}. Is the risk of a nuclear war less than that? To what should we attribute this rather egregious shortcoming? Are our nuclear planners naive? Or are they once again deliberately failing to fully inform the people of South Carolina of the sacrifice they are being asked to make?	Please see the response to Comment C-18-01 on nuclear attack.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-19	STATEMENT OF LESLIE MINERD	
C-19-01	MS. MINERD: My name is Leslie MinerD and I am not representing anybody — myself and my son. MS. MINERD: I moved here 22 years ago. I've moved away several times and often wish I hadn't moved back the last time. It's pretty hard living here in the poorest, most polluted, diseased, under-educated state in the union or in a good year, we ranked 48th or 49th. Anyway, that's why the bomb plant is here. The government gave us this bomb plant almost 40 years ago because we are obviously the most expendable people of this country. So, now you want to crank it back up? Who are all these bombs for anyway? I thought we already had bombs coming out of our wazoos. Lately, Bush has been seen rubbing elbows with Gorbachev, kissing the feet of the Chinese leaders, almost. Even Daniel Ortega is gone. Where is the war? Who is our enemy? You claim your reasons for restart are national defense. If you had any interest in this nation, you'd clean up all the radioactivity you've been spewing all over us for the past so many years, you would quit bankrupting all of our money on your ridiculous war games and you'd quit threatening us with the very potential meltdowns by your promise of cranking up obsolete Chernobyl-style reactors. It's about time the people of this country realized who our enemy is. It is DOE, Westinghouse, the Pentagon, and all of their cohorts. I fear that nothing short of a total collapse of our culture brought on by people like you or meltdown or perhaps an armed revolution — I doubt it — will stop you in your war games. I feel like I'm talking to a brick wall, but I will ask one more time. Will you war mongers please take your mentally unbalanced ideas and yourselves and go back to Washington or wherever it is you come from and you can stay there and you can please not come back to South Carolina. We have enough problems without an additional burden of having to deal with people like you. Thank you.	Comments noted.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-20	STATEMENT OF GENEVIEVE COMPTON	
	MS. COMPTON: My name is Genevieve Compton and I'm representing YELLE— Young Environmentalists for Living and Loving Earth. Before I make my statement, I'd like to make a statement that my father wrote because he couldn't be here today. He said this: "I have lived in South Carolina for most of my life and I have seen it change from a relatively poor, rural, segregated state to a relatively modern, urban area, which offers opportunity to all of its citizens. I'm very proud of what my state has accomplished and to be a South Carolinian. One characteristic which has marked the history of our state, for good and ill, has been the willingness of South Carolinians to stand up for themselves, to defend their state in the way of life against anyone who threatens it. I am, therefore, very disturbed to find today the willingness to trade away the birth right of my children for a quick buck and a few Federal promises. In the past 40 years, I've seen old lies, new lies, and liars in public places. A lot of these lies have been told about the safety and operation of the Savannah River site. Over and over we have been told, while it was true, that the government lied to us or forgot to tell us about the accidents and problems at SRP. They would never do it again. Over and over, we have accepted their lies, their wastes, and our danger. Enough is enough. The Savannah River site exists to produce weapons which inflict incredible damage on people and then turns lives of anyone who survives it into a long, slow torture. There is the disease from which there is no cure. Once we all believed that we needed this terror because of the terrible unknown that existed across the borders. Now, we know the terror incognito. We are no longer terrified. The time has come to just say enough. We have built enough, we have spilled enough, we have feared enough and it's time to let it go."	
C-20-01		Please see the responses to Comments C-01-02 on safety and C-02-05 on human health risks.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-20-02	Here is my statement. At the first graduating class of the New Governor's School for Math and Sciences, Governor Campbell said the state newspaper as saying that we would inherit his generation's environmental, social, and economic problems.	The SRS has been in operation continually since its beginning about 35 years ago. During that period, elements of the Site have been shut down for modifications or for lack of need over varying periods of time. For approximately the past 2 years, three reactors have been undergoing major upgrades and modifications, while the remainder of the SRS facilities have remained in operation. This EIS deals with the continued operation of those reactors. Also, please see the response to Comment C-02-04 on health risks and water supply.
	This is just typical of what our government has been doing for years — passing the buck to the future. This bureaucratic process has gotten our country into a lot of trouble and South Carolina especially.	
	If SRP is to be reopened, the United States Government, the South Carolina lawmakers, and businessmen and especially Westinghouse are passing on their problem to us. We, as the future, do not appreciate this at all. It is leaving us in danger by poisoning our water supply and literally passing your problems on to us is aborting our future.	
	We, as the future of this state, don't want to inherit your environmental, social, and economic problems. We are sick of smoke screens and lies and why SRS needs to be reopened.	
	The truth is that the Cold War has thawed. SRS is needless and dangerous and the problems need to be tended to now. Voltaire, the great French enlightenment philosopher said in his book, <u>Candide</u>, "tend your own garden."	
	Please don't leave the tending to us. That's the biggest sin that anyone could commit.	
	Thank you.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-21	STATEMENT OF KEVIN GRAY	
	MR. GRAY: My name is Kevin Gray. I'm with the South Carolina Coalition of Human Development and Progressive Change in the South Carolina Rainbow Coalition.	
	MR. GRAY: This is about the second time that I have spoken at a hearing, and it seems to me that perhaps the words that the man used this morning that we were just going through a sham, but I'm going to give you all the real deal, I hope.	
	In Columbia, Spartanburg, Washington, Los Angeles, cities around this country, every small town in the rural areas, the majority of black Americans live in poverty. They live with unemployment, they live with drugs, they live with crime. Over 50 percent of our young black men can't find jobs. Over 350,000 black women and children in the state of South Carolina live below the poverty line. A fourth of our black males are in jail or on probation or on parole. The ages are between 18 and 28 and do an average term of 18 years. They do long time. Infant mortality is up. Teen pregnancy is up. Racism is on the rise.	
C-21-01	So, when you talk about the need to build bombs, a need to build bombs under these conditions, you've got to be kidding. You've got to be wasting your time. You've got to be pretty much not concerned with the security of your own country to have another bogus hearing about something designed to kill people at some unknown time in the future when we say you're already killing us, you're killing us right now with misplaced priorities. We say enough is enough.	The need for nuclear weapons is beyond the scope of this EIS.
	Instead of building bombs, build affordable housing, build decent housing for poor people. When the most you can build for black people in this country are prisons and juvenile facilities, when the most you can build for black women and children are projects, when you put our people in institutions, prisons and killing fields, it's time for a change in our priorities. It's time that we end having sham meetings to justify somebody else's guilt and get serious.	
	It is time we put our priorities and start feeding our children and taking care of our country. It's time that we build the most	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	important resource we have and that's our people. Instead of investing in bombs, we need to invest in education and child care and jobs that make sense.	
	Economic development in the black community is not hiring us as janitors at Savannah River plant. It is not getting us involved in something that is long term death and pain.	
	Twelve years ago, the Russians were the Evil Empire and now George Bush and the rest of the white establishment in Washington are tripping over Russians everywhere. It is time that we start realizing the problems in our own country.	
	In Black America, we are facing a depression. We are living under Third World conditions. It's time that since we've cooled tensions with Russia, that you cool tensions within your own country. Our kids won't always shoot at each other. Our kids won't always shoot each other for sneakers. At some point in time — and that point in time is getting real close — they're going to start deciding who the real enemy is. And the enemy is a country that would spend more money and put more effort into building bombs than it does put into the education of its own people. It's absolutely ridiculous.	
	Of course, we are starting to realize that you might need that bomb because at some point in time when the kids stop shooting at each other and they start shooting at you, you are going to have to use nuclear bombs on yourself in this country.	
	Thank you.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-22	STATEMENT OF DR. ALBERT JABS	
	DR. JABS: Yes. I'm Dr. Albert Jabs. I'm Volunteer Director of Lutheran Human Relations. For 30 years, I have been involved with at risk people, at risk students, at risk American citizens. This is my work. My doctoral level work, my writings as a member of the black press, as a professor at Shaw University in Raleigh, North Carolina.	
	I come with a message from middle America. I do not have an ax to grind. I'm not right or left. I want to speak responsively a message from middle America. I've studied these issues and my life is involved with people. People are my priority. I have a background in social science and I've studied the issues. I want people to think about some words. Everyone here will resonate, react, to what I say. That's part of America.	
	Mr. Patterson, you need to be congratulated for having a forum like this. Your viewpoint is important. This is part of America, to have a forum of free exchange of opinions.	
	I came in at 10:00 o'clock. A message from middle America, as I see it, tells us are we accountable to the people? If we live in a constitutional system, and I assume we do — I teach my students <i>about our constitutional system — then you are essentially</i> responsible to us. You are our servants, not our servants, our servants. We elect you as servants to give us responsible, accountable policies.	
	We should be governed by the rule of law and consensus, a free exchange of opinion. I understand since 8:30 or 9:00 o'clock this morning that there generally has been unanimity in opposition to the startup of that plant. I don't want this to be an extreme position.	
C-22-01	After 30 years in the educational trenches of this country, urban and rural; south, Cleveland and Gary, I'm a family man, a church man, I do not have an ax to grind, but I'm concerned — repeat — I am concerned if the people of South Carolina are being dumped upon and there is research that suggests that the South is an environmentally at risk region.	Please see the response to Comment C-13-01 on health risks.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	This is holding us in contempt. We are citizens. We demand to be served as responsible citizens and not to be rough shod over and our opinions ignored.	
	Again, I am not right or left. I do not have an ax to grind, but I am concerned about people. A message from middle America is do not walk over us, do not ignore our opinions.	
	If I had a political role, I would say the same thing. Politically, politicians must be responsible to us. We elected them. Abraham Lincoln said it a long time ago that if this government of the people, by the people and for the people will ever perish, it will perish from inward irresponsibility.	
	Now, this is coming close. To start up that plant without regard for the opinions this morning is holding us in contempt. Repeat, it's holding us in contempt. You are our servants. You ought to be responsible to us.	
	I'm not a radical. I'm not right or left. I have a doctorate and 280 publications. I've studied these issues. If that plant represents risks to poor or rich, white or black, young or old, hawk or dove, liberal or conservative, then it represents an assault against our constitutional system and it must be repudiated.	
	Repeat, we cannot ignore the opinions of the people that have expressed themselves so eloquently this morning. This message should go out, a message from middle America, to the community here and to the broader state. This becomes an issue of vital importance.	
	I realize that some will say that extremism prevails today. There are those that would say it was an ideological kangaroo court. I know the slogans that can be used, but the heart of the issue, are you hearing the voice of the people because this is the lifeblood of our constitutional system.	
	We know what is happening in Eastern Europe. Changes, but the most profound event probably of this environmental decade, this age of ecological concern, is the Chernobyl event. A traumatic event that has put people at risk, not only in Eastern Europe, but throughout the world.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	We better heed these lessons. I believe that exceeds the Gorbachev and Bush encounter of the last few days. We need to hear of the environmental concerns.	
	I want to tell you something else and I do not want to assume more of the time than allotted to me. This country in the 1990s, I'm going to tell you, will rise up in our campuses, but they will also get middle America to support them. The environmental concerns not only involve the woman and her child over here or Mr. Muller who served in World War II, but it will involve you at the desk or I in the school or all of us. Our voices must be heard and must be respected.	
	I could go on and on about 40,000 people a day who die in this world. I could talk about 95 million people who are coming into the world every year, 5.3 billion, these are all ecological concerns.	
	But the environmental question is a political question. It's an economic question. Above all, and I don't want to sound like I come from a secretarian background, but it is a profound moral question. Are we accountable in our uses of energy? Are we paying royalty to the profit margin rather than to the people?	
	We are here to serve the people and not the profit motive. If I have to drag out my credentials, I'll do that. We need to be accountable to the people. That should be our priority. A message from middle America is listen to the voices that have expressed themselves here this morning.	
	I want to say one more thing. The four Cs and I will conclude, if you will just give me 30 seconds. Let our policies have four Cs. Let them have a sense of conscience. Let them have a sense of care. Let them have a sense of concern, so that coalitions of people can come about and resurrect this country and live out its full birthright.	

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

CAROLINIAN

RALEIGH, N. C.
VOL. 49, NO. 41
TUESDAY
APRIL 17, 1990

Earth Day Looks

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Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-23	STATEMENT OF MR. JERRY HENDERSON	
	MR. HENDERSON: My name is Jerry Henderson and I represent no particular group except the people of South Carolina.	
	I'm really overwhelmed by the enormity of what's been happening for the last 40 years. I saw Hiroshima and Nagasaki when I was 18 years old on the way to Korea. I went through by train. The desolation still burns in my mind, day in and day out, and year in and year out.	
	I just can't believe that our government over these last 40 years has disregarded our planet, our environment. I pick up the newspaper every day and I read about what's happened off the coast of San Francisco, a radioactive waste dump off some beautiful islands that are the habitats of some of the most beautiful species that are endangered and they're breaking up. Those containers are breaking up into the food chain, killing those animals.	
	I read about what's happening at our own Savannah River Plant. I find out that we had two nuclear accidents there in 1970. I lived about 50 miles away at the time. Nobody told me. Nobody said you should have a choice to take off, to jump in your automobile and head for Key West or some place. Nobody said a word. Here we are today, possibly in South Carolina having epidemics of cancer and thyroid deficiencies and nobody says a word.	Please see the response to Comment C-13-01 on health risks.
C-23-01	Why are we the zone of national sacrifice? Why must South Carolina be a substitute for Hiroshima and Nagasaki? What have we done to deserve this? Why did our government not at least tell us? Say, please, Mr. Henderson, would you like to go some other place? I think I would have chosen some other place. But nobody said a word.	
	Am I carrying some nucleotide in my lungs or in my intestines that will finish me off in a few years and I will never even know what really happened to me? Are there thousands and millions of people like that in our country? That's wrong.	
	We tested 150 nuclear weapons out in the West and nobody was told to leave. Nobody was told that would hurt them. We've done	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	more damage to ourselves than the Soviet Union has done. I think that's pretty sad. There's a book out now that I believe everybody should make an effort to get their hands on. It's called <u>Deadly Deceit</u>. There's a quote in here by Dr. John Gofman, who I happened to have the opportunity to meet one time. I will just sort of paraphrase what he said. He said that knowing what he knew and the other scientists knowing what they knew about the effects of low level radiation that Nuremberg-type trials would not be too much to ask for the people who have carried on this deception. I certainly agree with that. Thank you very much.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-24	STATEMENT OF CAROL WINANS	
	My name is Carol Winans. I live at 914 Highmarket St. Georgetown SC 29440. I am President of the local League of Women Voters in Georgetown County.	
	For my statement today I will read a letter I have written to all members of Congress from SC and to Pres. Bush.	
C-24-01	Dear President Bush: The need for restart of the K L and P reactors at SRP is based on the secret Nuclear Weapons Stockpile Memorandum which was approved by former Pres. Reagan in January of 1989.	Please see the response to Comment C-01-01 on the need for tritium and other nuclear materials.
C-24-02	There have been too many dramatic changes since Jan. '89 for that secret memorandum to be the reason for present policy on nuclear weapons systems decisions.	Please see the responses to Comment C-18-02 on DOE requirements and arms reduction. The need for nuclear weapons is beyond the scope of this EIS.
	Our leaders are still charting our future militarily and while Congress and the Bush administration are reviewing other weapon systems, military bases, etc. certainly the need for tritium and plutonium have to be a part of that review. To do otherwise will result in our nations policies regarding nuclear weapons buildup being determined by unelected beaurocrats at DOE.	
	I believe that once the American people realize that our elected leaders permitted this exorbitantly expensive, environmentally unsound and unsafe restart to take place without review from Congress and the Bush Administration and during a period of time when no urgency existed, they will consider it to be a blunder as colossal as the savings and loan scandal which was not reviewed by our leaders in time to save the situation.	
	There is too much secrecy surrounding this decision to restart. The independent oversight committee (the Defense Nuclear Facilities Safety Board) is operating in secret. The previously mentioned memorandum Reagan signed was secret and this Draft EIS says the reason we need tritium so quickly even though our present supply is adequate for 1,000 warheads for the next fifty years, is secret.	
C-24-03	I am writing this letter to all members of Congress from SC and to Pres. Bush because we in S.C. will suffer the higher cancer risk,	Please see the response to Comment C-13-01 on health risks from the continuing operation of SRS reactors.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-24-04	the contamination of our rivers, our soil, and our air. We need our SC delegation to Congress and Pres. Bush to protect us by providing nationwide participation that will ensure the public welfare. We have all learned what happened to Eastern Europe's and China's environment from decisions made by their beaurocrats, in secrecy. We have read that their horses have to leave their cities after two years; that they can see the air they breathe; that they cannot drink their water; that their babies are being born with defects; that their immune systems are failing and their children are sick and some are dying. They live near reactors as old as Chernoble's where there is a real danger of nuclear self annihilation. Will we in S.C. suffer that risk also? If the U.S. is to continue to proclaim itself as the world leader in the movement toward democracy then, in fact, you our leaders need to show the world that you know, that we elected you to practice it. Sincerely, Carol Winans	Please see the response to Comment C-14-02 on Chernobyl. Section 4.1.3 of the EIS presents the risks of accidents at SRS reactors.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-25	STATEMENT OF KEN STAUFFER MR. STAUFFER: Like Carol, this is my third hearing that I've been to on this subject. This time we had a real EIS to look over. Other times it was about the scoping for an EIS. I was flipping through it and it all kind of runs together after a while. A lot of it you can tell is kind of shallow work. After a while, I wasn't really interested in it and I guess that reason is because a lot of it I don't really believe. Why don't I believe it? Well, it don't have a real trustworthy track record — the DOE. That I think is what has gotten us into this situation today. Look at this big EIS and this much of it right here in my hands is what addresses the terrible possibility that maybe we don't need to restart. This is supposed to be a real EIS. That ain't a real EIS. I've seen real EISs and they don't look like this. These people, to put it bluntly, can't be trusted. They've shown us by their acts in the past that they can't be trusted. They couldn't be trusted before and they can't be trusted in the future. Another small example is this hearing today. First come, first serve. Carol, Sparky and I drove up from Georgetown, South Carolina, so that we could talk. How come we've got to drive up from Georgetown, South Carolina? Why isn't there a hearing in Georgetown, South Carolina? Huh? These people are supposed to be working for us, remember? Why do we have to drive up here? When we do get here, why do we have to take a number? Why can't we reserve time beforehand? What's going on here anyway?	
C-25-01		DOE believes that continued operation of K-, L-, and P-Reactors is primarily of local and regional interest and confines the public meetings to the Atlanta-Charlotte-Savannah area which lie within 180 miles of SRS. This encompasses the area most likely to be affected by routine or accidental releases if they occur. DOE also believes that the additional costs caused by large area public hearings do not justify their need. Hearings provide only one vehicle for commenting; DOE always requests written comments.
C-25-02	In the hearing before this, they told us that whatever we said in the hearing wouldn't even count anyway. I don't know if what we say today counts for anything. The integrity, or lack thereof, by the DOE is not just a cosmetic problem. Lately, the DOE has gotten real, real good at	Please see the response to Comment C-01-03 on public comments.

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

public relations. What his name — David Broder, big time, political columnist, wrote a wonderful column recently about Secretary Watkins doing a great job at DOE and all that stuff. But integrity won't be cured by public relations. It will have to be cured by involving the public in the DOE processes, in the DOE decision-making processes. If you don't, you're going to end up with the lousy decisions that you've made in the past.

The reason that SRP is such a mess is because so much of it has been done in secret. When you do things in secret, you've got less input into the decision-making process and there's less of a chance that somebody sitting around the table will say, hey, wait a minute. The fewer people you have sitting around the table, the worst decisions you are going to make.

This, right here, today, look around you, enjoy it. This is the public input. This is the public input into the restart of those reactors down there. That's pretty pathetic. They expect us to believe that this restart is going to go smoothly, no problems.

But what assurances do we have of that? What assurances will you give us that everything is going to go smoothly? We gave you this really neat EIS here. You can put it with the other green stuff in your den in your bookcase. That is no assurance. I'm not trying to be funny. That's about what it's good for. I don't need any more green decor in my den. I need a real EIS and by real professionals.

I'm a self-employed carpenter. My living depends on my personal integrity. People have to know that they can depend on the price I give them and the quality of my work. If I did stuff like this, I'd starve.

I don't know what planet ya'll are on, but I'm on the planet Earth. I deal with the real world every day. Until the people in DOE start dealing with the real world, there's still going to be hearings, there's still going to be lawsuits. A lot of the people in this room are going to be coming back again. And this is going to go on and on and on.

I know ya'll have been real patient sitting here listening to us. You know what you can do to make things better. You know what you can do to do right. It's up to ya'll whether or not to do it.

C-692

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	In conclusion, I'd like to say that the people of South Carolina have been more than patient in the past four years. We have bent over backwards. We have done everything we can. We have not been hard to get along with. I was born in Georgia and I have lived in South Carolina virtually all my life. I'll be 40 years old next month and I'm cranky compared to my South Carolinians. Most South Carolinians, they ain't cranky like me. In return, we have been poisoned and then lied to about it.	
	Enough is enough. This is ridiculous. The next time I make a trip up here for another hearing I'd like it to be for a real hearing about a real piece of work. It'd be nice. I wouldn't feel that I was just kind of taking the day off.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-26	STATEMENT OF KATHY RILEY	
	MS. RILEY: Good morning. My name is Kathy Riley and I'm the Director of Providence Home Women's Shelter. I'm here today to speak about the startup of the SRS.	
C-26-01	I think some of the train of thought for the proponents of this startup is that it is in the nation's security's best interest to do so. However, when some of this who are opposed to this push on the issue, we find that we get into the muddy waters of classified information. So, it's our nation's security, however, we can't the reasons for why. Some of us — and I include myself in that group — have a problem with that line of reasoning. I come here this morning because I think I'm an expert in national security and I don't say that loosely or lightly. For the past 14 years of my life, I have been working with homeless individuals. I believe that some of us have a perspective on the national security that is far more real than other people's. In my heart of hearts if I felt that if a bomb could help me and secure this nation, then I would be in favor. However, I think there is a problem with the national security. I think we are in danger and I think we do have a dilemma. Would that it could be that simple that a bomb would make it better. However, it's too simplistic, it's not the answer. We do have a problem with national security, but the answer does not lie in bombs. Several before me have defined the enemy. I, too, have my definition of the enemy. It is not out there over there or in some other country. That is not the enemy. The enemy is much like a nation which allows not hundreds, not tens, not thousands, but millions of people to be homeless in this nation. It is a nation which allows people to live in substandard housing, to be ill-equipped for jobs and to be ill-educated. The national security is at threat and a bomb is not going to make it better. I think if we don't look at the situation on a very large scale and some of us who are opposed to this are sometimes accused of being naive and simplistic, however, the contrary is	Comments noted.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	true. For some of us, we see life much more holistically and see much more of a connectiveness of life. For those of us who see a connection in life, the problem is that bombs do not help. They do not solve, they just destroy.	
	I think the national security is a risk. I think we need to seriously look at our priorities and I think we seriously have to look at what it's going to take to make this nation a better nation.	
	My feeling is that we are going to have to do something. We are not talking, as I said, of hundreds of thousands of people who are ill-equipped to manage daily life, we are talking about millions and that's a federal number. We are talking millions of people who, on a daily level, have nothing really to live for. I think the worse scenario is the quality of life will be so poor in this country that the easy answer will be a bomb. What an irony. That's not an answer.	
	So, we don't want to get to the point ever where this nation is so ill-equipped that the quality of life is so poor that it's almost easier to put us out of our misery. I would rather see the priorities shifted. I would rather see that we pay attention to some of the people in our own society whose problems are so great and so grave and are so growing in a population that the national security rests on our own selves.	
	We are the enemy. We don't have to go outside of our borders. Thank you.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-27	STATEMENT OF NORA ELKIN	
C-27-01	MS. ELKIN: My name is Nora Elkin and I represent the students of South Carolina. I realize that I'm only 16 and I don't have the ability to vote, but I'm still important because in a few years I will be able to vote and I won't wait. I'll jump at the chance to vote. I'm old enough to walk outside and look at the grass and the trees and the stream running through the woods and animals and the sky and I want to show those things to my children and my grandchildren. I don't want to die before that time comes along. I don't want to die from something that I can stop right now or hope to stop, if you all listen to us. Because there hasn't been many people sitting here going, I think the restart is important, I think we should restart. I think it's wrong. I think it's important that each of us realizes that we have children to think of. It's not just us and when we die it will be over. I hope it will go on. I will cut this short and just say I oppose the restart. I oppose my children not being able to see the beauty outside because of a bomb or because of tritium.	Comments noted.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-28	STATEMENT OF MELINDA S. MORTON P.O. BOX 512 MCLELLANVILLE, S.C. 29458	
	<u>Comment on the Draft Environmental Impact Statement for Savannah River Plant's K-, L-, and P- Reactors</u>	
	My name is Melinda Stone Morton. I am a native of the southeast region of the U.S., born in Tennessee, raised in Kentucky, Georgia, and North Carolina, resident for many years in the Appalachian mountains of Tennessee and Virginia. Most recently, I have been working in volunteer hurricane recovery efforts in McClellanville, South Carolina. I should add that I have lived in the vicinity of the Oak Ridge weapons facility and the sub-fuel plant in Erwin, TN.	
	I have three children and two grandchildren and I have worked as a teacher, community organizer, and writer, among other jobs. I have a law degree from the University of Tennessee and am licensed to practice law there.	
	I am very concerned about protecting the environment for ourselves and for future generations, and have worked for different environmental causes and for an environmental lawyer. I am concerned, as well, about the need for adequate housing and have worked with Habitat for Humanity, headquartered in Americus, GA to build houses for people in need.	
	You are going to hear plenty of scientific facts and mathematical statistics today. I want to talk instead about the feelings of the human heart and soul and about human needs.	
C-28-01	Both of the concerns I mentioned — substandard housing and environmental degradation — are linked either directly or indirectly to the Savannah River Plant and other weapons production facilities, and that is why I came here today to ask you to listen for a moment to my concerns. The root cause of both of these problems, I believe is excessive spending for military purposes, with corresponding inadequate spending for social needs.	Section 4.1 of this EIS addresses, analyzes fully, and bounds the environmental impacts of the continued operation of K-, L-, and P-Reactors, including the resumption of production after an extended outage.

C-697

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-28-02	The restart of reactors at the Savannah River Plant will only serve to exacerbate these problems, to make them worse. The restart will cause more damage to the Savannah River environment. The restart will channel more funds into the production of weapons and correspondingly will take funds needed for housing. We do not need to have those reactors restarted. Instead we need a cleaned-up, healthy and bountiful natural environment. Especially do many Black people and others who work at low-paying jobs, with wages insufficient to support the costs of decent rental housing or home ownership, need to be considered when decisions are made that ultimately affect the federal budget for government housing programs and home loans. Money spent for weapons production is money that is not available for housing and other human needs. We need a new definition of national security, one that is concerned with meeting needs of people and the planet rather than producing weapons.	The current potability of Savannah River water in relation to radioactivity reflects the entire prior discharge history of SRS as well as fallout deposition from prior decades. The river water and aquatic and marine species are now and have been well within applicable radioactivity standards for human ingestion, and there is no reason to expect that situation will change in the future (<u>Savannah River Site Environmental Report for 1988</u>, WSRC-RP-89-59-1). Risk assessments and environmental studies have accounted for potential cumulative impacts resulting from K-, L-, and P-Reactor operation.
C-28-03	In recent years and months, the international political scene and the prospect for arms control has improved tremendously. The rationale for a number of weapons systems has simply evaporated. Congress has recognized this and is cutting funds for weapons production. The tritium produced at the Savannah River Plant won't be needed. But decent housing will continue to be needed. How then can you justify the expenditure of huge amounts of money for the continuing operation of the bomb factory? The money that is used for wages and materials in the military industrial complex could better be spent for wages and materials in the human services sector. The bomb plant should be scaled back, not geared up. The environmental degradation that has already occurred should be cleaned up, not added to by a restart. The Savannah River Plant has become a hindrance rather than a help to the people of this region. We in the southeast should <u>not</u> be required to bear a disproportionate burden of the danger and the disease of nuclear weapons. Last week I commented at the hearings in Savannah because I had lived in Savannah as a child and feel close to the city and the	Please see the response to Comment C-01-01 on the need for tritium. The need for nuclear weapons is beyond the scope of this EIS.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-28-04	place. Traveling back from Savannah to Charleston County I couldn't help but contrast the remarkable natural and architectural beauty of Savannah with the area that was devastated by Hurricane Hugo. But then I thought about the silent deadliness of uncontrolled radiation from uranium, plutonium, and tritium and I realized that the loveliness of Savannah is very much at risk. There may already be irreversible damage that may ultimately be even more destructive than Hugo despite the fact that we can't see it with our eyes like we see the damage from Hugo. The bomb plant is like a worm inside an apple that looks good on the outside until the rot takes over. I think we ought to regard Hugo as some kind of warning from a divine force telling us to clean up our act. I believe that God - The Great Spirit - Yahweh - The Collective Mind - Mother Earth - Gaia - The Goddess - whoever or whatever you believe in - is angry because of the mess and the injustice we've perpetrated on the Blessed Creation, our Planet Earth. If we continue to put military might before human needs, if we continue to destroy ourselves with cancer and other diseases caused by radiation, who will be left in the end to appreciate the awesome wonder of the natural world or the brilliant design of some human works? Savannah River is a good place to start the massive cleanup and the setting of new priorities that are needed if Earth and the humanity She makes possible are to survive. Keep the reactors shut down! Thank you.	Sections 4.1.2.1 and 4.1.2.2 of the EIS discuss radioactive releases from normal operations at SRS; Section 4.1.2.6 discusses health effects.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-29	STATEMENT OF REGINA TURETZKY	
	MS. TURETZKY: My name is Regina Turetzky and I'm representing myself. I was not going to speak this morning, but since we were given another section of time, I felt that my voice should be heard too.	
C-29-01	I've heard overwhelming reasons not to start up the reactors at Savannah River Plant all morning long. I hope that DOE will listen to the voices of the people.	Please see the response to Comment C-01-03 on public comments.
C-29-02	Last December, I went on a tour of the Savannah River Plant with the League of Women Voters. I was shocked to learn that the half-life of the by-product of tritium is 1,000 years. This waste material was placed on ceramic sheets and stored on site. It is hoped they can be moved to a mountain in the West, but no state in the West wants it. It is so disturbing to realize with this production for our national defense we will be using a product that will be with us for thousands of years and can cause untold damages to our future generations and to those living now. It is a shame that there cannot be a referendum for South Carolina, Georgia and North Carolina, those areas most affected by SRP. Instead, we must rely on your discretion. Please listen to the voice of reason, the voice of the people. Do not start up the reactors at Savannah River.	The Defense Waste Processing Facility, which is scheduled to begin operation in 1992, will convert high-level waste, not tritium, into an essentially insoluble form not subject to environmental transfer. The associated saltstone plant for processing low-level waste from high-level waste tanks began operation in June 1990. The half-life of tritium is 12.3 years.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-30	STATEMENT OF ROBERT GUILD	
	MR. GUILD: Thank you, sir. My name is Robert Guild, G-U-I-L-D. I'm a Columbia attorney and I represent the Energy Research Foundation.	
	In part, in a federal court proceeding entitled, <u>Energy Research Foundation versus Nuclear Facilities Safety Board</u> , my comments with regard to the environmental impact analysis for the reactor restart, Savannah River Plant, will address primarily the flaws in that environmental analysis that flow from the failures by the Safety Board to adequately assess the safety of the reactors for restart.	
C-30-01	I understand you have heard substantial comment from those who have testified today and in other hearings about the lack of benefit from this federal action. That is, the lack of need for further defense nuclear materials from the proposed restarted Savannah River reactors.	Please see the response to Comment C-01-01 on the need for tritium and other nuclear materials.
	It's apparent to most members of the American public that in this era it's simply unjustifiable to continue to produce defense nuclear materials. Let me address, however, the other side of the cost benefit equation and that is the cost of these reactors.	
	Congress found the United States Department of Energy woefully lacking in a number of the public participation and procedural safeguards necessary to assure the safe restart of these reactors. In the basis of those widespread failures, created an independent regulatory body charged with the mission of overseeing the safety of these facilities. This body was the Defense Nuclear Facilities Safety Board.	
	In hearing on the confirmation of its chairman, John Conway, and in Senate hearings leading up to the adoption of the legislation creating the board, it was clearly understood and to the maximum extent possible, this Defense Nuclear Facilities Safety Board should function optimally the way the Nuclear Regulatory Commission functions with regard to private commercial nuclear power reactors.	
C-30-02	Time and again, we have heard Secretary Watkins commit, in principle, to comparability, that the reactors at Savannah River and	DOE operates the SRS reactors in compliance with its own safety criteria, which are comparable (but not

C-701

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-30-03 C-702	other defense nuclear facilities should meet standards at least as stringent as the commercial nuclear industry.	identical) to those the NRC applies to commercial nuclear power facilities. Also, please see the response to Comment C-02-01 on safety oversight.
	Assurance that such comparability is achieved is only possible through a stringent and independent process to oversee and determine that the Department has met those safety goals. Unfortunately, the Defense Nuclear Facility Safety Board's process and oversight is fatally flawed and because that process is flawed, the Department is unable to accurately access the true costs in terms of public health and safety of the decision to restart these reactors.	
	Ironically, while both Chairman Conway of the Defense Nuclear, Facility Safety Board and Chairman John T. Ahern, former Chairman of the Nuclear Regulatory Commission and Chairman of the Department's Advisory Committee on Reactor Safety, confirm that it is their judgment that the Safety Board should function like the Nuclear Regulatory Commission, the reality has been far different.	Section 2.1.3.3 of the EIS describes the powers, functions, and some recent recommendations of the DNFSB. Its positions on the applicability to the functioning of the FOIA or the "Sunshine Act" are beyond the scope of this EIS.
	The Defense Nuclear Facility Safety Board has formally taken the position that it is not subject to the most basic, open government laws that assure that its decision-making is both open to the public and ultimately that its decisions are effective. The Defense Nuclear Facility Safety Board insists that it is not subject to the Freedom of Information Act nor to the Sunshine Act.	
	The FOIA, the Freedom of Information Act, is a hallmark of open government legislation because it assures that government meets only after giving notice to the public, inviting the public's attendance, promulgates its general rules of operation, so that the public knows how it does its business. It makes available public records so that the public can observe and independently judge the effectiveness and accountability with which the government does the public's business.	
	The government, in the Sunshine Act, assures that meetings and decisions made by government bodies are not made in smoke-filled rooms behind closed doors, but instead are made on the public record after notice and an opportunity for the public to attend and observe.	
	Incredibly, the Defense Nuclear Facility Safety Board insists that it is not subject to either of these open government laws. Ironically the Department of Energy itself acknowledges that it must be subject to the Freedom of Information Act and the Sunshine Act.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	Ironically, Chairman Ahern's Advisory Safety Board, it too complies with the Freedom of Information Act and Federal Advisory Committee Act that assures, like the Sunshine Act, that meetings are held in the open.	
	So, Congress had gotten this strange beast with the Safety Board of a facility that is less responsive and less open than the very department it was intended to reform. This is simply unacceptable.	
	We get, as a product of the Safety Board's decision making terse, conclusory, one page sets of recommendations, wherein the commerical industry, those same subject matters would be included in volumes of hundreds of pages of detail. We are asked as members of the public, who have no ability to participate in the Safety Board's process, to comment on these terse, conclusory recommendations. In due course, we make our comments.	
	For example, Energy Research Foundation and the National Resources Defense Council commented on March 29, 1990, on a set of recommendations published by the Safety Board. We prefaced our comments as follows: Our comments are necessarily circumscribed by the Board's failure to provide access to Board meetings and information on which these recommendations are based, including, but not limited to, reports from consultants or contractors to the Board, notes and/or minutes of meetings with consultants or contractors, reports from the Department of Energy or Westinghouse to the Board, notes and/or minutes of meetings with DOE or Westinghouse, notes and/or minutes of Board discussions on these recommendations.	
	Without access to the Board's deliberations or the above information, we are unable to fully and fairly judge the overall adequacy of the Board's recommendations, nor can we accurately gauge whether additional recommendations are warranted. In substance then, it is impossible for even the most active and interested members of the public to adequately participate in the Board's activities.	
	Just one example, the Board, in its first set of recommendations, incredibly found that the Savannah River Plant was located in Georgia. We gave them an instant instruction in	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-30-04	geography and pointed out to them that the facilities they were supposedly making safe was in South Carolina, in our homes. That kind of error, which is just simple, fundamental, should have not occurred in the product of the Board's activities, its final recommendations.	
	If we had an open process, the first day that a Board member had a meeting and said, "It's good to be talking about the Savannah River Plant here in Georgia," he would have heard from the public that his geography was slightly erroneous.	
	How many other errors of a technical and safety significant nature are buried in the reports and consultants' documents that we have yet to see?	
	We urge the Department of Energy to recognize that the process that leads to restart is fundamentally flawed, that the Defense Nuclear Facility Safety Board that Congress established to provide independent, regulatory oversight of the safety of these facilities design and construction, has not yet begun to conduct its activities in a fashion that will assure its effectiveness. Let alone, a fashion that will give the public confidence that its work is accountable and responsive. We ask you, therefore to decide "no" on the question of reactor restart on the basis of these flaws in the environmental analysis of the costs versus the benefits of this action. We believe that the no restart decision is required by the National Environmental Policy Act for those reasons. Thank you.	DOE is following the NEPA process in its assessment of the environmental consequences of K-, L-, and P-Reactor operation; the DNFSB will provide input into the DOE Record of Decision.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-31	STATEMENT OF CHARLOTTE SPEAKER	
	MS. SPEAKER: My name is Charlotte Speaker. I came here very ill-informed or at least less so, I feel, than many other people here about the current situation concerning the Savannah River Plant.	
C-31-01	I was very moved by the compassion and concerns shown by those who wish to stop the reopening of the plant. I feel fortunate that there are people such as these on this earth and such as yourself that provide a forum for listening. For if listening is what you are doing, Savannah River Plant will not reopen. Thank you.	Please see the response to Comment C-01-03 on public comments.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-32	STATEMENT OF J. WILLIAM HOLLIDAY THE AGRICULTURE COMMISSION OF S.C. 15TH JUDICIAL CIRCUIT Statement delivered by J. William Holliday at the Public Hearing June 5, 1990 on the Draft Environmental Impact Statement (DEIS) for Continued Operation of K-, L-, and P-, Reactors at the Savannah River Site in Aiken, South Carolina. My name is William Holliday. I'm from Galivants Ferry, S.C. I represent Horry and Georgetown counties on the State Agriculture Commission. This evening, however, I'm not speaking for or on behalf of any group or organization or in fact for anybody or any group now living in South Carolina. Instead I am speaking on behalf of those who have not yet been born. Maybe the ones I speak for won't be born for another forty or fifty years. I don't know. All I know is I probably won't be around then, so I had better say what I have to say now.	
C-32-01	What concerns me most about restarting the reactors at the Savannah River Plant is that experts say these machines inject more tritium into the biosphere—meaning anything that lives, breathes, eats, drinks—more tritium than all the other nuclear reactors in the U.S. combined. I understand that Dr. Karl Z. Morgan, the leading health physicist in this country, has called this amount of tritium injected into us South Carolinians "outrageous". When you consider the fact that tritium is a genetic toxin, an outrageous amount of tritium is downright scary. It's scary because scientists can't predict what genetic toxins like tritium will do to our chromosomes, our DNA, can't say what they will do until a couple of generations down the line, say forty or fifty years from now. And what a precious thing this DNA is, this gift of life we pass on to our children. Guy Murchie, the great biologist and scientist, says that the "essence of the child is its genes, (which are) the mysterious blueprints of growth and development, of physical mental and spiritual unfoldment." This famous scientist says further that if you "were to translate the coded messages of a single human cell into English, they would fill a thousand-volumed library."	The EIS discusses atmospheric and liquid releases of tritium at SRS in Sections 4.1.2.1 and 4.1.2.2; it discusses health effects in Section 4.1.2.6. Please see the response to comment C-13-01 on health risks.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	The question we ask today is how much genetic toxin or tritium, can we absorb before it alters our DNA, the "golden thread" that links us to the origin of life itself? And how many generations will have to wait to see what mutations, if any, will occur in the physical and mental development of their children and grandchildren?	
	As I say, most of us won't be around to find out. Maybe nothing will happen. Or maybe the kind of thing that happened to the farm animals at Chernobyl will happen: <u>Time</u> magazine says colts were born with eight legs, deformed lower jaws, disjunct spinal cords; that 197 freak calves were born, some with deformed skulls, distorted mouths, some with no eyes.	
	What about human babies? What will happen to them fifty years from now? Maybe nothing. Or maybe the kind of thing that happened at Love Canal will happen: According to physicist Brian Swimme, 36 pregnant women were exposed to genetic toxins at Love Canal. Only five of those pregnancies were normal. Some babies were born dead, some babies were born without ears, one baby girl was born with two rows of teeth in one jaw, and one baby was born without a face.	
	In conclusion, what all this horror says to me is that we'd best not tread on hallowed ground. We'd best not release any more of this tritium, this genetic toxin, into the biosphere, into us ourselves. We owe this much to that from which we come. We owe this much to those who will come after us. I hope the Department of Energy will think long and hard—way into the future—before restarting the reactors of the Savannah River Plant.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-33	STATEMENT OF LYN PHILLIPS 610 CAPITOL PLACE COLUMBIA, SC 29205	
C-33-01	My name is Lyn Phillips. I am a lifelong resident of the state of S.C. and have lived in Columbia for 12 years. I am a social worker with a master's degree and have worked to provide critical human services to the poor in our state for all of my professional life. It is from this experience that I would like to express my earnest opposition to the restart of SRP's reactors. South Carolina is one of the poorest states in the nation. We have the third highest infant mortality rate in the U.S. (This rate is one of the most sensitive indicators of the health of a people). We rank 51st in the nation in terms of quality of life and opportunity for women citizens. These facts are only a few of the shameful health, education, and poverty statistics our state must claim... and many of our citizens must LIVE daily without relief and with little hope of change.	Comments noted.
C-33-02	The more I grow as a human being, as a spiritual person, and as a thinking, rational being... the more insane our state's priorities become. We have a wonderful state... beautiful and varied in environment and RICH in its people. But those in power have denied or ignored our critical human needs and the unequal society we live in by prioritizing the building of nuclear weapons. In an age of enhanced working relationships between the superpowers, why do we continue to make this terrible choice? An ultimately catastrophic choice! It seems to me that the legislators and businessmen who "SELL S.C. OUT" must practice massive denial of their humanity daily in order to continue to support SRP... while literally denying many of their constituents life.	The need for nuclear weapons is beyond the scope of this EIS.
C-33-03	I will not enumerate the well-known safety issues proven by practical experts. The consequences of the risks we take are beyond description. Not only do those in power CHOOSE to deny these consequences... they CHOOSE for many of our citizens a continuing life of poverty and hopelessness and poor health. As a South Carolinian, a stepmother, and a social worker steeped in the reality of life for too many people in our state... I appeal to you to choose LIFE. I OPPOSE THE RESTART OF THE SRP REACTORS.	Please see the response to Comment C-13-01 on health risks.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-34	STATEMENT OF PAULINE REIMERS	
	My name is Pauline Reimers and I am speaking as a concerned resident of South Carolina. I represent no organization.	
C-34-01	I sat in on this morning's meeting and I came away with very mixed emotions. I was singularly impressed by the tirelessness of the people who spoke. It was enormously encouraging to hear people who apparently have voiced their opposition to Savannah River Site time, after time, after time. And yet, I couldn't escape the feeling that they were not at all sure that anybody was listening to them. Rather like knocking on the hall door of a house in which all the lights are on and yet somehow you get the feeling there's nobody at home. I think we could look at that "somebody" who is absent from the house as The Voice of Reason. Where is The Voice of Reason in all of this? And, as I look at you two gentlemen here this evening, I wonder if The Voice of Reason still lives within you?	Please see the response to Comment C-01-03 on public comments.
C-34-02	It doesn't take a genius or a nuclear physicist to see that using an obsolete and highly dangerous facility to produce something that is not needed and using enormous sums of money to do this, is insanity.	Please see the response to Comment C-01-01 on the need for tritium and other nuclear materials.
C-34-03	I would like to spend these brief minutes focusing on one aspect of the nuclear industry, and, this is: how do we cope with a major radiation release? I want to raise the issue of what do we do when a major radiation release occurs from one or more of the reactors at the Savannah River Site?	As described in Section 3.9 of the EIS, DOE has an emergency preparedness plan in place in the unlikely event of a major radiation release.
C-34-04	This issue has become important to me as a result of research I did as part of an advanced degree at the University of South Carolina here in Columbia. I spent over a year-and-a-half researching the response of Western Europe to the Soviet nuclear power plant accident at Chernobyl.	Please see the response to Comment C-14-02 on Chernobyl. Section 4.1.3.1 of the EIS discusses possibilities of reactor accidents at SRS.
	The Chernobyl accident is significant here because it involved the greatest release of radioactivity ever experienced by the earth at one time. I want to emphasize, however, that a major radiation release is a major disaster, regardless of whether its source is a privately owned nuclear power plant or a government run nuclear weapons facility. It's <u>all</u> extremely dangerous.	

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

I'm not a physical scientist so I was not measuring levels of radioactivity in soils, water, and foods. What I did do was look at how national governments and larger organizations such as the European Community coped with the radioactive fall-out. I looked at how they coped with this deadly pollution that travelled thousands of miles.

I embarked on my research with the basic idea that the European Community, which is deeply committed to nuclear power, and the European national governments that are likewise committed, would therefore have workable plans for dealing with a nuclear disaster. After all, common sense told me, one doesn't create a technology as horrifyingly dangerous as the nuclear industry without also developing a system for dealing with the inevitable accidents that will occur, whether because of equipment failure or human error. But, that is precisely what we have done.

The Europeans were no better able to cope with the fall-out than were the Soviets.

The Soviet government was severely criticized by the West for what was perceived as being a reluctance to divulge information on the accident. While, initially, they may not have rushed to spread information beyond their own borders, much of the silence was due to ignorance. The Soviets did not know then, and still do not know today, what are the effects of a large radiation release on the people, the soils, the water, the food. But, we in the West are no wiser.

The Soviets evacuated about 120,000 people in the days and weeks after the accident. Six weeks ago, they appropriated funding to evacuate a further 200,000. And this, gentlemen, is 4 years after the radiation release.

Why the delay? One of the main reasons is that they were waiting for high radiation levels to drop, but they haven't. Another major factor is that they don't know how radiation behaves in the life systems of this planet. But we in the West do not know any better. Humankind of the late 20th century is unable to cope with the problems nuclear facilities generate.

At the time of the Three Mile Island accident here in this country in 1979, the Chairman of the Nuclear Regulatory Commission

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	(NRC) said: "We are operating almost totally in the blind. The Governor's information is ambiguous, mine is non-existent and - I don't know - it's like a couple of blind men staggering around making decisions."	
	Quite frankly, we have no way of dealing with a major nuclear accident because there <u>is no</u> effective way of dealing with a major radiation release. And no Environmental Impact Statement on the face of this earth can effectively address this issue today.	
C-34-05	Using risk calculations of known reactor accidents worldwide over time, there is a 70% probability of a serious accident occurring every 5.4 years and a greater than 95% probability that a major nuclear accident will occur within the next 20 years. These statistics were computed by a highly respected English consultancy firm in 1986. And we have already used-up 4 years of those precious 20.	Section 4.1.3.1 of the EIS presents the risk of severe accidents at SRS reactors.
C-34-06	The Savannah River Site's reactors are ancient antiquities in very unstable and precarious condition. The maximum life span of a nuclear reactor is around 30 years; S.R.P.'s are close to 40 years old. The K. L. and P. reactors at S.R.S. ought to be decommissioned, not put back into use. That South Carolina's environment has been irreparably damaged by the S.R.P. facility is undisputed; that many of the people of South Carolina have been contaminated by S.R.P. is also undeniable. Is South Carolina also going to have the distinction of having the first U.S. nuclear facility to give this country its own major radiation release?	As indicated in Section 2.1.2.3.2 of the EIS, DOE has identified no life-limiting mechanism for the SRS reactors, which differ substantially in design and operating modes from commercial power reactors.
	I'm not a fortune teller, nor am I a doomsday merchant, but looking at the facts and balancing them with the odds, the future does not look very promising for South Carolina and the U.S. if reactors K. L. and P. at S.R.S. are restarted. And no Environmental Impact Statement can <u>truthfully</u> say otherwise.	
	Thank you.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-35	STATEMENT OF SENATOR ERNIE PASSAILAIGUE REGARDING THE DEPARTMENT OF ENERGY'S PLANS TO RESTART THE K, L, AND P REACTORS THE SAVANNAH RIVER SITE. JUNE 5, 1990 I am Ernie Passailaigue, a citizen of South Carolina, a state senator and a candidate for Governor. The health and safety of this state's citizens and future generations and the preservation of our environment are of paramount importance to me. I am therefore compelled to testify against the proposed restart of the aged K, L, & P Savannah River Site reactors.	
C-35-01	The restart of these Chernobyl age reactors which still do not meet the current safety standards for commercial nuclear reactors is not reasonable and prudent... and when it comes to activities that threaten public and worker health and safety and endanger our environment, we must proceed with extreme caution. Rather than restart, I feel we should follow the advice of national security experts, former CIA Directors William Colby and Stansfield Turner, former Secretary of State Cyrus Vance and former Defense Secretary Robert McNamara, who call for placing the reactors in "cold stand by".	Please see the response to Comment C-30-02 on DOE and NRC standards.
C-35-02	These experts, as was noted in the State newspaper, feel that the United States has no current need for additional plutonium. And that if the Soviet Union and the United States continue to reduce their nuclear weapons arsenals that additional tritium is also not needed.	Please see the response to Comment C-18-02 on the need for tritium and other nuclear materials and the world geopolitical situation.
C-35-03	I am speaking of a "cold stand by" like that described by Dr. Gordon Thompson. One where the reactors would be maintained and upgraded, where staff would be familiar with reactor operations. Where staff no longer involved in reactor operations would be transferred to "clean up the site and decommission the C and R reactors".	Please see the response to Comment C-03-04 on cold standby/cold shutdown.
C-35-04	There is enough work in the estimated \$25 billion environmental clean up of SRS that no current employees should lack for an equivalent job and new jobs should be created. These should be good jobs also, for the technology and skills that will be required to truly clean up the current mess at SRS will be useful in cleaning up other environmental tragedies in South Carolina, in other states and	EPA has set rigid requirements for workers involved in the cleanup of hazardous waste sites. DOE has

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	in other parts of the world. <u>They must also be safe jobs.</u> SRS should become the cutting edge of nuclear and hazardous waste cleanup.	similar requirements for its workers in a radiological environment.
C-35-05	A place where true cleanup occurs and where worker health and safety are fully protected. We must heavily invest in cleanup technologies now. <u>Our national security requires it!</u>	Please see the response to Comment C-05-03 on waste management and environmental restoration.
C-35-06	The Department of Energy should release all past environmental monitoring data and all health studies on workers at SRS. The public must be aware of the affects SRS has had on South Carolina. Such information is necessary so appropriate measures can be taken to lessen future damage should restart ever become necessary. Additionally, all three levels of the Risk Assessment should be completed and appropriate sections subjected to independent review at the earliest possible date. We currently have the opportunity to fully understand the impact of restart before we decide to do so. We must take advantage of it.	DOE publishes environmental monitoring data and programs annually in SRS environmental monitoring reports (WSRC, 1989). Appendix B (Section B.1.5) of the EIS describes previous and current epidemiological studies of SRS workers and the general public, and Secretary Watkins has announced on several occasions that DOE is releasing the health records of all its employees to qualified researchers. Also, please see the response to Comment C-04-12 on PRA.
C-35-07	South Carolinians have been and continue to be an integral part of this nation's defenses. We are a proud and patriotic people and we deserve to have our national government look after our health and safety and environmental quality as well as national security. Restarting SRS reactors now before the Risk Assessment is complete, before the reactors can operate at commercial reactor safety levels, before past health and environmental data have been released and analyzed, at a time when defense experts say that restarting the reactors is unnecessary does not make sense to me. The sensible approach is "cold stand by", further study and public scrutiny, and a massive clean up effort. DOE's decision must not diminish the importance of South Carolina's environment and her citizens' health and safety. Thank you for your time.	Please see the response to Comment C-01-02 on safety.

C-713

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-36	STATEMENT OF MAUREEN NERY In the June issue of Harper's magazine there is a brief excerpt from a memorandum prepared daily by DOE officials for Secretary James Watkins. This particular memo, dated March 12, was accidentally sent to the offices of the nation's 50 governors, instead of the DOE regional offices. The responsible employee was fired, but Harpers got the memo. Here are two items from it: 1. Westinghouse Savannah River Company issued a nonconformance report when it discovered that seismic support U-bolts were missing from supplementary safety injection lines at L - reactor. 2. DOE/OSHA inspectors found three energized bare wires in Building 105 at P-reactor. Classified as imminent danger and wires made safe. Investigation ongoing.	
C-36-01	The biggest question in my mind here is not "What exactly is the effect of missing seismic U-bolt supports, or energized bare wires," though I shudder to think. But the biggest question is "Why was that employee fired?" If daily memos are so secretive at DOE that you can lose your job by sending them to the wrong people (the nation's governors) what exactly are we being told and what is being kept from us? Are you surprised at this lack of faith? If someone lies to you on more than one occasion, don't you have less inclination to believe you're getting the full truth the next time?	The employee in question was not discharged; he was reassigned to another position because he committed security infractions. DOE has since initiated a policy of open distribution of these daily memos.
C-36-02	It was with similar skepticism that I examined the draft EIS, extracted under the legal duress of an Energy Research Foundation lawsuit. As I struggled to understand what was written, I continually wondered what was not there: secret memos, edits, and outright omissions. I also wondered about words like "significant," as in "no significant risks," "reduced," as in "reduced air quality," and "detectable" as in "no detectable impact." Such ambiguous phrases make me suspicious that there are many safety issues at SRP that should in truth be called "danger issues." DOE's own SRP Tiger Team and Mr. Watkins himself confirm my suspicions. The Tiger Team report was released April 26, simultaneous to the EIS, and the department itself admitted that many problems are not resolved.	Before the lawsuit was filed, DOE informed the Energy Research Foundation of its intent to prepare an EIS on reactor operation. On July 9, 1990, the Federal District Court in the District of Columbia dismissed the lawsuit without prejudice. Also, please see the response to Comment C-01-02 on safety.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-36-03	Now I'm no scientist. When I read in your report that "excess cancer fatality in the population within 80 kilometers would be 8.8×10^{-3} per year," I had to call somebody to ask if that's a lot or a little. When I found out it's a little, scientifically speaking, I thought there's no such thing as a little, personally speaking. When all the figures are in and checked by objective sources outside the Department of Energy or Westinghouse, even if the increase is statistically small, is it worth it? Let's go back to your word; significant, which you applied in a mere statistical sense, to the problems of an area, state, or an entire civilization. What is really significant is people, individuals, and in this case, avoiding preventable human tragedy. If even one person gets cancer because of what happens at the Savannah River Plant, it is significant and detectable. If my sister or my child or I get cancer, it's not slight, or statistically insignificant to me. It kills.	Please see the responses to Comments C-13-01 and C-13-02 on health risk.
C-36-04	It doesn't take a scientific mind to realize that there are many risks here - small as they appear in DOE reports, or large as they loom in my imagination. There are risks not only to health, but to life and the earth itself. We know this because we have seen the tragic consequences, most obviously at Three Mile Island and Chernobyl. One risk, for example, is the cooling tower for the K-reactor, which is not up to the Clean Air Act thermal discharge standards. What menace is so powerful, so great, that Westinghouse is willing to utterly disregard the standards - your own report says the new cooling tower won't be finished until January 1993 - to continue the production of tritium and plutonium? Thirty years ago, the answer to that question was clear, and of course the risks were much less obvious. The big brown Bear was stalking the globe, and we believed it had to be kept at bay. It was patriotic, noble, and very lucrative to work at SRP.	Please see the responses to Comments C-14-02 and C-34-05 on Chernobyl and severe accident risks.
C-36-05	But now the bear is faltering, and bargaining for peaceful coexistence. All over the world walls are crumbling, and the cry of human freedom is being heard. The people of South Carolina, who have long been known for their silent acquiescence or their support of what they've always called the Bomb Plant (no ambiguity there, for that, quite simply, is what it is) - these people are also hearing freedom's cry and they are beginning to say: "We no longer wish to live under the tyranny of the Bomb Plant. We don't believe the risks are necessary. We don't want those reactors restarted,	DOE may operate under a Consent Order (84-4-W) from the South Carolina Department of Health and Environmental Control. DOE is expediting the construction of the cooling tower. Section 5.2.5 of the EIS contains information on compliance with water-quality requirements.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	nor do we want any new ones built. We want an Environmental Impact Statement that says clearly and definitively: the SRP environment is being improved because we are putting our efforts, our talent, and our patriotism into cleaning up the mess we've made."	
	Maureen Nery 2 Trent Drive Taylors, S.C. 29687 June 5, 1990	

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

• Transportation Safeguards Division reported that a DOE convoy was followed and photographed (by antinuclear activists) in Texas and Oklahoma on March 8. Vehicles following convoy displayed signs that read NUCLEAR BOMB ON BOARD. No warrants out on vehicles.

• Management Support Division's annual safeguards and security survey indicate a shortage of classified parts at the Albuquerque Microelectronics Operation. Custodian aware of problem since July 1989.

• Westinghouse Savannah River Company (in Aiken, South Carolina) issued a nonconformance report when it discovered that seismic support U-bolts were missing from supplementary safety system injection lines at L-Reactor.

• DOE/OSHA inspectors found three energized bare wires in Building 105 at P-Reactor (at Westinghouse Savannah). Classified as imminent danger and wires made safe. Investigation ongoing.

• A subcontractor employee, while being escorted to (top security) Building 332 at Lawrence Livermore National Laboratory to repair transfer switches, was denied admission when routine survey by explosives-trained sniffer dog detected Speed Loader with six live rounds of ammunition for .357 magnum (no gun) and traces of marijuana in vehicle.

• Fire in weapons-cleaning trailer at Hanford Patrol Training Facilities (in Hanford, Washington) reported March 9. Caused by faulty fluorescent light ballast. No injuries; trailer a complete loss; remediation under way.

• Rocky Flats security inspector was arrested March 11 in Aurora, Colorado, on suspicion of burglary, assault, and rape. Employee suspended; badge to be confiscated.

[Tip] MOTIVATING TOOLS

From a set of pamphlets that are inserted in employees' biweekly paychecks at more than 4,000 companies in the United States. The inserts are published by The Economics Press in Fairfield, New Jersey.

Be a Fast Starter

If something has to be done, WHY NOT NOW?

If something can be improved, THE SOONER THE BETTER!

If something should be corrected, LET'S TACKLE IT TODAY!

No matter how intelligent or able you may be, if you don't have a sense of urgency, now is the time to start developing it. The world is full of very competent people who honestly intend to do things tomorrow, or as soon as they get around to them. Their accomplishments, however, seldom match those of less talented people who are blessed with a sense of the importance of getting started now. Learn to be a fast starter. You'll get a lot more done.

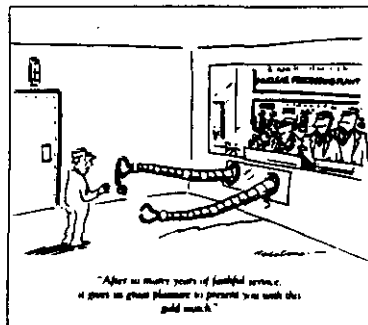
Your Work Affects Profits

Many job-holders don't see how their everyday work affects profits. At times you may even feel that way yourself. Your job may seem far removed, or it may seem that profit is something handled by people in the accounting department.

That isn't so. The plain fact is that everybody's work affects profits. For example, are you careful and economical in your use of materials, tools, equipment? It's essential to have what you need to do your job; it's equally essential that you don't waste things just because they happen to be easily available. Imagine the drain on profit if everyone decided to build up his or her own personal stockroom. Even pencils and paper clips cost something. All of us have to do our share. No company can grow money on trees.

Play to Win Every Day

Does it occasionally irritate you that your employer keeps insisting on better work, greater efficiency, and better service to the customer? Actually, it isn't your employer who demands



Firm Punch.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-37	STATEMENT OF CHARLICE HURST	
	MS. HURST: My name is Charlice Hurst, and I am a member of YELLE, Young Environmentalists for a Living and Loving Earth.	
C-37-01	This morning, I heard several people mention that this is not their first hearing, but in fact, they have been here two and three times before. My question is, where were your ears the first couple of times? Did you not listen, or did you just care about what was heard here? In a couple of years, I will receive my voting rights. Supposedly, that will be the time when I will be an active member of this system of democracy. But I am starting to wonder if that has any significance whatsoever. Right now, I am protesting and fighting the politicians so that when I am 18, I can see how the elected politicians and then protest and fight them.	Previous speakers evidently referred to scoping meetings on the EIS, which were held in April 1989. The Draft EIS addressed the concerns expressed at those hearings. Further, DOE is required by law to consider all substantive comments on the EIS in its preparation of the final EIS.
C-718 C-37-02	It makes no sense. I think that this scenario is being played over and over, where the people talk and the so-called leaders pretend to listen. I look forward to the day when our words are not wasted, our votes are not misused, and our elected officials act in our best interests, not in the best interests of the profit margin.	Please see the response to Comment C-37-01.
C-37-03	To make it worth my while to go down and register in two years, I am going to have to start seeing some of those basic values concerning humanity in the American political system. The most commonly-used excuse that I hear for the restart of the Savannah River plant site reactors is that we need the weapons to protect democracy in the western hemisphere. But let me tell you that the insistence of the government on acting against the well-being of the people will be enough to send democracy tumbling down around us. The less you pay heed to our voices, the more democracy crumbles, and all you are left with is your corporations, radiation, and impending self-annihilation.	The need for nuclear weapons is beyond the scope of this EIS.
	I intend to have a future. In this future, I intend to have children; not soon, but years down the line. Leave them a world. I hate to think of what they will have if the Savannah River Plant is reopened and nuclear bombs continue to be manufactured. Just the other day, my mother told about when there was no color TV; I can see having to tell my kids about the days when people were not phosphorescent. And it is not just me. Your children will want	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	children too, and they will be no better off than I am. They have no shield around them. If the destruction continues, there will be no distinguishing between politicians and protesters, socialists and capitalists, communists and democrats. Notice that the Cold War is over, but there is still no cure for cancer. I know that you are afraid that your political system will topple, but there are those of us who fear much more. Lend us your ear, maybe you will understand. Hopefully, politicking has not bled you of all humanity.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-38	STATEMENT OF CLAUDE GILBERT	
	My name is Claude Gilbert. I am a native of South Carolina. I am speaking as a taxpayer, businessman, family man; and I have done this before.	
C-38-01	DOE has got to be redirected away from the New Production Reactor and toward cleanup. Tonight, we are hearing all the facts. I challenge every one of you to read up on this. It is scarier than any horror story that you could ever read, and it is true. I just wish our elected officials — where is our real Governor tonight? And Mr. President, how did we get in this mess?	This EIS is directed toward the continued operation of K-, L-, and P-Reactors at SRS; the NPR is the subject of a separate EIS.
	I am sorry DOE, you have no credibility with the citizens of South Carolina. I am also speaking for citizens of Georgia and Florida who are going to be affected by the operations at SRP. You have to be held accountable for the damage. I understand that Westinghouse does not want to be held accountable for any problems there. When there are fines, the taxpayers pay the fines. And they say that they cannot operate the plant if they have to be held accountable for their actions. That does not quite make sense.	
	DOE has 40 years of lies. Maybe some of you remember "duck and cover"; that used to be the way to help yourself in case of nuclear attack. Also, one of their favorites is "at no time is the public in danger."	
C-38-02	I would also like to talk about the impact. I would like to talk about jobs at SRP, and let us talk about jobs lost. The tourism industry is not real big in Chernobyl right now.	Section 3.2.5 of the EIS discusses the socioeconomic impacts of the proposed action and its alternatives.
	And you can imagine the frenzy that this state went through during Hurricane Hugo. If there is an accident at SRP, it really is going to be a problem, not just tourism, but our peaches will not be growing so well, either.	
	That is why they probably call Georgia "the peach state," even though we make more of them.	
	There is also a lot of concern and a lot of citizens feel helpless about what to do. About the only thing that a private	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	citizen can do now is to boycott the 50 nuclear weapons manufacturers. That is the only positive thing that you can do, and probably the only thing that you will get a reaction from. Earlier, you mentioned space missions and the plutonium. I know that I do have the name of the rocket; I do know that NASA did shoot 49 pounds of plutonium into the air several months ago, and after it went up, after protesting and all, they released a statement saying that they could have used solar power, but they used the plutonium instead, at great risk to everyone on the planet.	
C-38-03	You also mentioned cold standby. I am somewhat concerned about decommissioning. I think that you all have a problem in that area because you all do not seem to want to talk about it. I know that a small reactor has been decommissioned, but you never decommissioned one the size of the nuclear reactors at SRP.	DOE will decontaminate and decommission its facilities at the appropriate time (i.e., at the end of useful technical service life).
C-38-04	Lastly, I would just like to say that I am on the record as against the restart of the reactors. Please clean up the mess that you have already made. And I am sorry that you all gave Westinghouse seven million dollars today for doing a good job. I also want to thank the environmental groups that did this so that we could talk today. Thank you.	Please see the response to Comment C-05-03 on waste management and environmental restoration.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-39	STATEMENT OF WILLIAM STARNES	
C-39-01	MR. STARNES: My name is William H. Starnes, and I live in the northeast direction of all this contamination. Let us stick to the placement of the plant, and all this other stuff can be covered later. I am concerned about all the strontium-90 and plutonium-239 that is released to the atmosphere. And when you get out there and make a communique about the releases, you always refer it being by comparing it to an X-ray. That is just like if you were standing in a clay pit, and I come up and hit you on the head with a clay dump, and I would say, "Well, I hit him with less than background." I am concerned about the cavities out there in the ground. I believe that 105-R was built over, and it was taken out of service because of that, because they had to pour in the fill with concrete. And also, these settling basins that they have out there — I was the one who put the dye in the systems and found out that it was going to dump the contamination and radiation into Three One Creek, so, they built the settling basins. All that contamination out there, and all this contamination went into the bare ground, untold curies, and there have been breakthroughs out there of the B-line, where they produce plutonium — not plutonium-240, not plutonium-239. You can take that dot of graphite and scrape it off and put it on an electrical balance, and put that much plutonium as that graphite dot, there. That is enough for 2,400 people to have a body burning. And I am worried about the area where you have got your waste tanks, and all the cavities that you had to fill in around them. I want that checked out. And it is in a seismic area. And I know that the cracking of the stainless steel — every one of those 24-inch valves that went through all those reactors, I devised and I cleaned them — decontaminated so as to save the government money. That area is so obsolete, and you are putting out a lot of contamination, and you are not letting all these people know about it. And I do not know why the media is letting you all get away with it. I can give you chapter and verse, but I want you to address out there, the earthquake area and all the contamination that is coming right over. And when you get a release, you run down	Sections 4.1.2.1, 4.1.2.2, and 4.1.2.6 of the EIS discuss atmospheric releases and their health effects to workers and the offsite population.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-39-02	to OLA, as you know that according to the Department of Agriculture, the predominant wind has always been from the southwest to the northeast. Do not go way down to Charleston or down below there to look for something, when you ought to be coming there around where I live. I think that you have done a shoddy job of letting us know information, and you have kept it hidden. I do not know what the heck is coming to the citizens here when anybody who is working there -- they do not live downwind, they will not move over to Aiken, out of the wind pattern. And you build everything over it. If you are going to operate it, let us know what the heck the dpm per milliter, and let us make the darn thing, and tell everything like it is. And as far as the half-lives of some of these isotopes out there, you know good and well that you do not need all that stuff.	Please see the response to Comment C-35-06 on environmental monitoring reports, effects on human health, and the availability of the reports to the public.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-40	STATEMENT OF DONNA WRIGHT	
	MS. WRIGHT: My name is Donna Wright, and I am a counselor in the public schools of South Carolina. I have spoken before. I am not sure that I understand everything that he was saying, but I do know that I agree with everything that he said. There are many of us who speak of peace and rejoice because of the end of the Cold War. There are a lot of people who are still talking though about building bombs. It must be very, very confusing to the children who are growing up in South Carolina. It must be confusing to the other countries when they are looking at us, talking of peace and this type of thing, but ready to start building more bombs. For the last few years, I have read everything that I could get my hands on and watched everything that I could see that pertained to the Savannah River Plant, the safety there, tritium, restarting the reactors, Chernobyl. And based on everything that I have read and everything that I have seen, I am still not convinced that this is the proper thing to do. In fact, I am not convinced at all. I am convinced that the country that I love is willing to sacrifice the state that I love. It is just real evident to me that they are willing to do that. I do not understand that. From all my research, I do believe that it is possible that South Carolina could be the next Chernobyl. It seems like in South Carolina, it is possible that we have to give up our lives and the children here have to give up their lives when they are young because of decisions, unnecessary decisions that are made in a place as far away as Washington, D.C. that pertain to our state. In all sincerity, I would like to ask that you consider, and from the deepest of my heart, please do not play with our lives in South Carolina. We love our children, we love our friends; do not play with our lives like we are pawns on a chessboard. Thank you.	
C-724 C-40-01		Please see the responses to Comments C-01-01 on the need for tritium and C-14-02 on Chernobyl. The need for nuclear weapons is beyond the scope of this EIS.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-41	STATEMENT OF ELAINE FRICK	
	When I first picked up the Draft Environmental Impact Statement I immediately went to the section "Purpose and Need for the Proposed Action".	
	I flipped back to Appendix A, "Need for Material" and found an almost blank page — "classified information" it announced.	
C-41-01	How can we discuss this issue if I don't have the facts? Must I take for granted the statement that if reactors K, L, and P were put in cold standby "material production requirements would not be met"?	Please see the response to Comment C-01-01 on the need for tritium and other nuclear materials.
C-41-02	Political alignments and defense needs can change overnight — witness the communist world's turnabout in these amazing months just past. I believe the perceptive minds of our societies have seen what even Dr. Seuss described in his children's parable "The Butter Battle Book."	Please see the response to Comment C-18-02 on the changing world geopolitical situation.
	The story, briefly, is this: great hostility has developed between the Yook, and the Zooks over whether you should butter your bread on the <u>top</u> or the <u>bottom</u> . The Zooks create a fantastic sling shot; in defense, the Yooks retaliate with a triple-sling jigger. Tensions mount in Dr. Suess style as the two sides continue to create ever-more-fantastic weapons systems to counteract their opponent's most recent creation. There's a final Yook invention by the boys in the back room. "They've thought up a gadget that's newer than new. It is filled with mysterious Moo-Lacka-Moo, and can blow all those Zooks clear to Salamagoo. They've invented the bitsy big-boy Boomeroo." But the Zooks create one too. And the book ends abruptly, each side perched and ready. "Who's going to drop it?" a young boy cries. "We'll see. We will see..." is the last reply.	
	We have been, for all our modern technology, all our environmental analyses, all our classified production projections, no wiser than the Yooks and the Zooks. Every word in this Environmental Impact Statement presupposes a need to continue not only to hold a nuclear holocaust threat over the heads of our planet but to hold a nuclear contamination threat over the citizens of South Carolina. Where is our civilization's wisdom?	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-41-03	This classified Appendix A is based on outdated 1989 projections made before many of the recent historic cuts; projections made before the agreement in the last few days of a cut by 30 percent of our strategic arsenals. The environmental impact statement says that, "The primary use of nuclear materials in defense programs is in <u>building</u> and <u>maintaining</u> the nation's stockpile of nuclear weapons." Friends, our world is no longer in the self-destructive era of <u>building</u> nuclear weapons; our world is no longer in the fatalistic era of <u>maintaining</u> nuclear weapons. To the credit of our culture and history, our world is now in an era of <u>scrapping plans for production</u> of new weapons and <u>defusing</u> the bombs we already have. David Albright of the Federation of American Scientists estimates that there is sufficient tritium to meet the requirements of 3,000 warheads for 35 years or 1,000 warheads for 50 years. If there is a need for tritium and plutonium 238 for non-weapons purposes, we should accelerate the development and construction of newer, better designed reactors; we must not crank up again the aging, 40-year-old reactors that are far past their prime and ready for mothballs. We don't need to continue operating this huge facility for the small amounts needed for non-weapons purposes.	Please see the response to Comment C-01-01 on the need for tritium and other nuclear materials.
C-41-04	What we must do is this: maintain the reactors in cold standby, keeping employed those needed to maintain the facility and to clean up the areas already contaminated. Then we will have done better than the Yooks and the Zooks by wising up and putting down our fists full of bombs, by putting in cold standby our production reactors. Thank you. Elaine Frick 2921 Ocoola Street Columbia, SC 29205	Please see the responses to Comment C-03-04 on cold standby and Comment C-05-03 on waste management and environmental restoration.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-42	STATEMENT OF TOM SUMMER	
	MR. SUMMER: My name is Tom Summer. I am a United Methodist minister and a lifelong citizen of South Carolina, having grown up near the beautiful banks of the Edisto River, about 55 or 60 miles east of the so-called bomb plant.	
C-42-01	In struggling through the very massive document that you produced, I have come up with several general reactions and impressions that come more out of passion and anger. One is the whole realm of feelings that get generated by not only me, but as I hear speakers who come up to this microphone, and the variety of speakers who come up before these various hearings, to me, they speak very clearly to the fact that the bubble has burst, that the insanity that has guided this nation for well 40 to 50 years in terms of a trek toward death is senseless; the dream has ended. It is as if we are spending all of our money, even risking our lives toward pumping up those three dinosaurs that are over there. When will the Department of Energy wake up to the fact that there are encroaching networks, people with hands reaching out to one another throughout this nation — as we are hearing tonight — groups throughout this country that are saying, "It's over." This past summer, I had the opportunity of being invited to an international conference near Prague, Czechoslovakia, where were gathered about 40 people representing the field of pastoral care, a variety of clergy from eastern Europe, western Europe, North America and some of the developing nations. To the very person, those people were looking over the shoulder of DOE, wondering, "When will DOE wake up? Why is it that this nation, resting on a great deal of money, wealth and power, is still continuing the trek toward death?" I also had the opportunity to visit Terisin, one of the concentration camps during the Second World War — perhaps, many of you have been through there on visits. It was a chilling visit to walk through those chambers, to see where hundreds of people were wiped out. As I remember my history of hearing about the bomb plant developing, and as there once was an Ellington that mysteriously developed into a new Ellington, I get chilled to think about those three Terisins over there, resting on the beautiful banks of the Savannah River.	Comments noted.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-42-02	The dream is over. And when will DOE really listen and dialogue with the kinds of words and passions coming from citizenry throughout this state and this nation? The second reaction that I had when plowing through this very massive document is that, to me, it seems as if the statistical gymnastics that are resident there are awfully misleading and misguiding; they may be statistically accurate, but who knows? I am not a physicist. But I think that it is part of the cloak of secrecy to put out such a document where, generally, the populace cannot really, in availability, grasp with simplicity, the deathly meanings behind some of those statistics. I would encourage the DOE to put out a document that is more humane, more passionate, more in touch and in contact with the networks of people who are saying, "Let's talk." Finally, one reaction in plowing through this document was, again, the awareness of several passions that are in me and that I am sure might be in other people. One is the growing of tomatoes. It is very beautiful soil that we have. Another is the attempt to nurture children, and perhaps, my children's grandchildren. I find that what you are continuing to do in terms of even suggesting the option of restarting these dinosaurs, these death chambers, threatens so vitally the ecological web of life, that I get very, very angry as a person living on this earth at this time in history, thinking that somehow there will no longer be tomatoes, no longer might there be children or grandchildren, or grandchildren of grandchildren. Thank you.	Please see the response to Comment C-01-03 on public comments.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-43	STATEMENT OF MR. MATTHEW BREEDEN	
C-43-01	MR. BREEDEN: My name is Matthew Breeden. It is so ridiculous to think they you pay to die — tax money. I do not think that the reactors were ever needed in the first place. They say that the nuclear weapons keep peace, but that is not peace; it is fear.	The need for nuclear weapons is beyond the scope of this EIS.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-44	STATEMENT OF ERVIN WAGNER	
	MR. WAGNER: My name is Ervin Wagner. This morning, when I woke up, I had not planned on coming here, but, laying in bed before I got up, I thought about it and decided that I would.	
C-44-01	I will tell you a little bit about who I am, and then, I will tell you why I came here. I started out as a 17-year-old in joining the Army National Guard before the Korean War started, and stayed in for nine years. Then, I went into the U.S. Air Force, trained, and was a pilot for eight years before I became disabled and was forced to retire earlier than expected. I will comment about your Environmental Impact Statement from the DOE in that your feet have been held to the fire, and I am going to urge you folks not to make any more dumb mistakes as might have been done in the past, or do not even make any smart mistakes. We cannot afford it. I want to say that as a National Guardsman, I was well trained, and I learned well what it took to survive in the case of war. Now, who wants war? Not me; especially, not me. But, I wound up as an Air Force pilot in a war. I took an oath to our Constitution, to our flag, to our country, and to you that I would stand and guard you and your liberties so that you could come to this meeting and tell your government officials what you think. Now, unfortunately, I am going to say this: Some of you do not know what you are talking about. So, I am going to sort of briefly go over my life experiences and point out a few things to you. As I said, as an Army-trained enlisted man, I learned what it took to survive on the battlefield. I am not the only one; maybe, some of you did, too. But I did know a great many individuals, and some of my friends are in the ground now because of their service and their oath. I went into the U.S. Air Force, was trained as a pilot, and I learned about nuclear weapons. I obtained clearances, and I handled nuclear weapons for a number of years in a number of different positions. And I know what nuclear weapons are all about, as do most other Air Force officers and many others. But I want to say this: As part of my travels, flying transport planes all over the world, before and during the Vietnam conflict, I	Comments noted.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	passed over a few places that I want to remind you of. And I will start with Pearl Harbor, and the monument to the <u>Arizona</u> and 1,000 sailors laying in the water. There is one reason why those sailors are in that water, and that is because an awful lot of isolationists in 1939, 1940 and 1941 did not want to believe that we could get in a war. The Japanese believed it, the Germans believed it; we did not. We paid a horrible, horrible price. And let me tell you something: If you think nuclear death is bad, you ought to ask those sailors on the <u>Arizona</u> what it is like to blow up or to feel a machine gun bullet going through your guts, or any other way that you can die on the battle field, whether you are a military man or an innocent civilian.	
	One of the next places that I flew over was Corregidor and Bataan. We lost a lot of good lives there. We lost them because we were not prepared to stand up for rights, and those bodies are still in the ground, and they can never come back.	
	We suffered that defeat because we were not prepared; we did not have enough Navy, we did not have good enough fighter planes to go against the zeroes to protect the troops on the ground. Those poor troops on the ground were defending Corregidor and Bataan with 60-year-old Navy guns built and installed to protect ships instead of airplanes. And they had been warned by General Billy Mitchell and others what to expect, who the enemy was going to be in just about the year that they were going to have to fight, and they did not do anything about it.	
	Forty years — I am sorry — 50 years ago, today, there is a place called Dunkirk that was a hellhole for the British Army. And the French survivors of the Nazi Blitzkrieg, 300,000 British soldiers, were evacuated at great cost, something like 60,000 or 80,000 British troops died so that 300,000 could live, but they left Dunkirk with not even a bullet in their pockets, much less a weapon. And for five or six months, England was totally disarmed, except for RAF and the Royal Navy. The Battle of Britain nearly took out the RAF; they were not prepared because they had people who did not want to believe that Hitler meant war. Now, because we were not prepared as the United States, as Britain, as France, something like 100 million people died in that war, and made Russia what it is today: our nemesis.	

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

I have studied the Russian language a little bit. One of my best friends is a Russian translator. He used to work for the Joint Chiefs of Staff as the Chief Russian Translator. He did some sensitive operations in Soviet Russia and North Vietnam. He is in the hospital now as a disabled veteran, being treated for a nonrelated cause. Many of my friends are still in VA hospitals, in and out, being treated for the sacrifices that they made to make you free tonight.

The reason that I bring up that point is to tell you this: I am a disabled veteran myself, as of 23 years ago. And 23 years ago, now, I just concluded a series of treatments, and I received something like seven million milligrams of radiation through my body. And I am here today to tell you that there are some things worse than radiation, and that is being dead. And I will tell you something: If you think that the Russian Bear has been disarmed and does not have teeth, you are wrong. They are not stopping, they are not undoing what they have done. They are ready. The only thing is that we are too big and too bad for them. And if we do not maintain our strength and our powers to render them helpless, they will render us helpless, and you ain't seen nothing yet until you get sent off to Siberia or the Chinese rice paddies. So, listen to me: There are worse things as radiation, as undesirable as it might be. And there is a worse thing than being frustrated, and I can tell you what it is: to be either a slave or dead. Thank you.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-45	STATEMENT OF BOB HALLMAN	
	MR. HALLMAN: My name is Bob Hallman. I initially came here today to listen and had hoped to get some written comments to you by the 25th, but, having listened to some of the speakers here and the gentlemen who just came up, I would like to join the minister who, I think, somewhat out of context, was maybe being a minister and was trying to say how angry he is.	
	And I think that what I feel here today. I just feel pure anger that we, as a society, sort of get into your game a little bit. And I realize that it is not you as individuals, but you perpetuate this; you are part of it. And that is, that we can sit in a situation like this and talk with a lack of compassion, lack of emotion, maybe, is what I am trying to say, about such a horrifying situation. And while I respect the gentleman who was up here a minute ago, his right to make the comments, we are not talking about radiation — we are talking about the moral fiber of our country, which is dying by a system that will allow corporate profit — we are not talking about national security; we are talking about corporations making huge amounts of money by continuing to build these bombs. And it is those people and the corporate system in our society that are strangling us as a people.	
C-45-01	And I think that while some people have said that we have heard people who have been here before, and they are not being heard, what you are seeing here today that you have not seen before is that children are coming forward. And something that I have been just exactly proud of is that the young people are coming out, and they are growing in numbers, whether it was when Bush was here, the people were there to protest him. The young people are coming out; our children are going to start speaking up and saying to our government, "We are not going to stand it any longer."	Please see the response to Comment C-01-03 on public comments.
	And I guess what I would like to say is that I do not feel relaxed about this; I feel very angry about it. And I just hope that more people will begin to come out. The draft EIS that you sent, I attempted to go through it, but it is one of those kinds of documents that I think just by its pure size and its gobbledygook, it immediately sets the average person off so that he is not going to attempt to get through it. I think that that is for experts, but	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	this is no longer an expert issue; this is a people issue; this is an issue which we ask our government to be humane to its people and stop allowing corporate profits to control our country and allow us to have the kind of world that we say our values, our democracy, our equality, our justice speak to. There is no justice or equality in the way the system is run at this time, and I am on record as being against it, I am on record as being angry about the way that you treat the issue; do not start these plants up again. Thank you.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-46	STATEMENT OF SARA SCHECHTER-SCHOEMAN 1502 Hagood Ave. Columbia, S.C. 29205	
	I have lived in South Carolina for 15 years and I am raising my family here. This is only the second time I have felt strongly enough about an issue to speak out publicly. Even if I were to agree with the government's assessment of the need for additional production of tritium and plutonium, I think it would be very risky to restart the reactors at the Savannah River Site until the Defense Nuclear Safety Board has resolved all the open issues now facing the site.	
	The issues raised recently by the federal government's own General Accounting Office include the following:	
C-46-01	1. A July 1988 GAO report stated that the proposed nuclear safety advisory committee "does not meet our recommendations for establishing independent oversight of DOE's nuclear facilities. It appears that the committee is not an independent organization and does not have clear authority to require DOE to address its findings and recommendations. In addition, it is unclear to what extent such findings and recommendations will be made available to the public." 2. An October 23, 1989 GAO report specifically on the SRS found that "inadequate quality assurance procedures both at the manufacturing facility and at the reactor caused problems" leading to the use of incorrect materials at the plant. As the GAO technical experts stated, "the quality assurance problem is another in a series of incidents at Savannah River pointing out poor internal controls and management inattention to safety." 3. A December 20, 1989 GAO report stated that "since its beginning in 1981, DOE's Unusual Occurrence Reporting program has provided an incomplete picture of unusual reactor-related events at the SRS." Between 1982 and 1987, only 39% of the occurrences that should have been reported to DOE were. The GAO found that this was due to inadequate oversight of contractor operations by the Savannah River Operations Office. While the GAO stated that the Office was trying to improve oversight, they found that more needs to be done.	Please see the response to Comment C-05-04 on the DNFSB. Section 2.1.3 of the EIS discusses external oversight.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	4. The next week the GAO issued a report pointing out how inadequate earthquake protection at the SRS is.	
	5. On March 2 of this year, the GAO referred to its previous testimony on "serious problems at the nuclear weapons complex and the staggering cost to address them." The GAO then stated that the situation is no better in 1990. According to the GAO "widespread environmental contamination exists at many DOE sites and the full extent of the environmental problems remains unknown." The GAO then estimated that it could cost up to <u>\$155 billion</u> to address the existing environmental problems at defense nuclear sites.	
C-46-02	6. And most recently, on March 28, the GAO issued a report entitled "Nuclear Health and Safety: Need for Improved Responsiveness to Problems at DOE Sites". In this report the GAO found that as of January 1990, DOE computer data showed over 1,700 safety and health problems and almost 1,300 environmental problems." According to the GAO, "the majority of these problems have not yet been corrected."	Please see the response to Comment C-01-02 on safety.
	Skimming these reports, it's not surprising that Secretary of Energy Watkins referred to the defense nuclear facilities as a "Sword of Damocles." This sword is not hanging over him, but over me, my children, and the rest of us who live in the vicinity of the reactor.	
C-46-03	The DOE in its draft environmental impact statement concludes that there is a continuing need for the production of tritium and plutonium to assure the defense of the United States. This does not take into account the unprecedented changes in east-west relations which have occurred just in the past year. Renewed nuclear weapons production seems a misguided priority.	Please see the response to Comment C-18-02 on the need for tritium and other nuclear materials and the changing world geopolitical situation.
	In the last two decades, the federal government's funding of education has declined significantly. Several so-called "Third World" nations have lower infant mortality rates and longer life expectancy does the U.S. The federal program providing food to impoverished infants and mothers has been cut back. The phenomenon of homeless families is incomprehensible to many nations poorer than we. The U.S. is no longer technologically competitive with Japan. Our deficit and balance of trade situations worsen every year.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-46-04	The route to <u>real security</u> and <u>real defense</u> of our way of life is not through increasing our atomic arsenal, but rather through using our resources to adequately feed, house, and educate our people, and to use our technological know-how to clean up the environmental mess we are in and create a healthy environment in which our children can thrive. Thank you.	Please see the response to Comment C-05-03 on waste management and environmental restoration.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-47	STATEMENT OF MITCHELL JAY WOLIN, MD	
	Assistant Professor of Ophthalmology University of South Carolina	
C-47-01	1. Given the remarkable change of atmosphere in the "cold war", it is highly doubtful that the previously determined "National Security Needs" are still applicable. Rather, I think that the actual need for nuclear weaponry has markedly decreased. The need for restarting SRP is no longer present.	Please see the response to Comment C-18-02 on the changing world geopolitical situation. The need for nuclear weapons is beyond the scope of this EIS.
C-47-02	2. The real dangers of the plant are definitely great. Contamination and leakage, as well as thermal threats, are real and clearly hazardous. South Carolina is being chosen to bear the brunt of this because we are a politically weak State.	Please see the response to Comment C-28-01 on environmental impacts.
	3. The weighing of pros and cons clearly shows that the reactors at SRP should not be restarted.	
	Thank you.	
	Mitchell Jay Wolin, MD	

C-738

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-48	STATEMENT OF CATHERINE COLEMAN	
	MS. COLEMAN: All right. My name is Catherine Coleman. I am a doctoral student at the University of South Carolina in school psychology. I am also Co-Chairwoman of the World Summit for Children Candlelight Vigil that we have here in Columbia, South Carolina on September 23.	
C-48-01	I am here to express that I think that the Savannah River Plant is a distortion of humanity's purpose on earth. If there ever was a time when nuclear power was necessary for life, that time has passed. The Russians no longer are our enemy; therefore, the Savannah River Plant is an overkill, a waste, a waste of money that is desperately needed by the 40,000 children who die preventable deaths annually in the United States. I want everyone who thinks that the reopening of the Savannah River Plant is a pouring of money down a worthless hole to come with me and to say that we want the first priority of this country to be children, and not nuclear arms, and against the reopening of the Savannah River power Plant.	Please see the response to Comment C-01-01 on the need for tritium and other nuclear materials.
C-48-02		Please see the responses to Comment C-20-02 on reopening SRS.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-49	STATEMENT OF MEGAN ROSSER	
C-49-01	MS. ROSSER: I am Megan Rosser, and I represent YELLE, Young Environmentalists for a Living and Loving Earth. And lately, these last few weeks, since I got home from my first year at college, I have been involved in a number of activities protesting the reopening of the Savannah River Plant. And a lot of people say about protesters, "You have no respect, you are un-American." But I would not be doing it if I did not care very much about America and care very much about our state.	Please see the response to Comment C-20-02 on continued operation.
C-49-02	Since the 1950s, the Savannah River Plant has been producing plutonium and tritium, ingredients for nuclear weapons. This plant has never produced electricity; only ingredients for bombs. This is the only plant left in the entire United States which still produces these ingredients.	Please see the response to Comment C-01-01 on the need for tritium and other nuclear materials. The need for nuclear weapons is beyond the scope of this EIS.
C-49-03	Meanwhile, the plant was disposing of their radioactive wastes in cardboard boxes piled high in open ditches. The radioactive waste is in such close proximity to farmland and groundwater that it is not hard to see how easily our crops and drinking water could be contaminated.	SRS conducts all radioactive waste disposal in accordance with EPA and DOE requirements, as described in Sections 2.1, 3.8, and 4.1.6 of the EIS. The quantities of radionuclides released from past burials of such wastes do not pose a threat to public health. These wastes are being monitored; plans for remediation are in various stages of development and implementation. Please see the response to Comment C-05-03 on waste management and environmental restoration.
C-49-04	In addition to these risks are the ever-present risks of nuclear accidents. This last fall, Hurricane Hugo dealt the entire state of South Carolina a severe blow. Now, more than ever, we need to be pouring money into rebuilding our state, not pouring money into a bomb plant which threatens the health of our state. Two main reasons always given for the existence of SRP are recreation of jobs and defense against communists. All my life, I have been told by the media, schools and our politicians to fear the Soviets, to fear communism. This is used to justify the massive production of nuclear wastes. Well, I think that we have something	DOE discusses the risk of reactor accidents in Section 4.1.3 of the EIS.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-741	a lot scarier to fear than the Russians. What about the thought of a state where most children are born deformed or sterile, a state where food and water are radioactive? These things scare me a little bit more than communism. I am afraid for my future and the future of my grandchildren and their children. Just last night, I was listening to the evening news, and I heard Gorbachev say that the Cold War has finally ended. Yet, even in light of this, Americans are still taught that we need nuclear weapons for defense against the U.S.S.R.	
	We are still being taught to fear, and it is definitely in the best interest of big business to keep the public paranoid. Our fear lines the pockets of Westinghouse; it is in the best interests of Westinghouse to reopen SRP, but what about the people of our state? Do a handful of businessmen and politicians have the right to destroy the lives of an entire state for generations to come for profit? I think not.	
	Political squabbles are usually short-lived, but the effects of radiation lasts for millions of years. It is often said in defense of SRP that South Carolina needs the jobs that it creates; well, I think that it is a sad day when being unemployed is considered worse than being dead of cancer.	
C-49-05	Anyhow, thousands of jobs could be created if the plant were cleaned up. There is no excuse for the ancient, unsafe reactors at SRP to be reactivated. The reason why it was closed down in the first place was because it was finally admitted that it was unsafe. Why repeat past mistakes and reopen? We must clean up SRP before it is too late.	Please see the response to Comment C-01-02 on safety.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-50	STATEMENT OF MS. WENDY SHOUGH	
C-50-01	MS. SHOUGH: My name is Wendy Shough, and I represent the human race, not really any organization.	Comment noted.
	I did not prepare a long speech or anything. I just wanted to say that it is obvious to me with all the facts that the only reason for this is money. And if you can look at this little girl and tell me that money means more than her, then, I do not know what this country has come to. Are you happy? That is all I really want to say. Thank you.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-51	STATEMENT OF MS. HELEN HUDSON	
C-51-01	MS. HUDSON: Thank you. My name is Helen Hudson, and I am here before you tonight, not as a spokesperson for any one organization, but simply for myself, and perhaps all those who choose to create life rather than to create death and destruction. This is not the first time that I have been here and stood before you. Since that first public hearing two years ago in Aiken, I have wondered what my reasons are for continually appearing before you. I have wondered if my presence and my friends' presence has made a difference, has been felt. I have wondered how you can sit through countless affirmations of hope, life and peaceful conflict-solving and continue to make nuclear bombs. I realize that the issue of making bombs is a complex one; therefore, I am not here to propose a simple solution. I do, however, wish to address several issues in relation to the proposed restart of the K-, L-, and P-Reactors.	Please see the response to Comment C-01-03 on public comments. The need for nuclear weapons is beyond the scope of this EIS.
C-51-02	In reference to the Environmental Impact Statement, recent studies, including the DOE's SRP Tiger Team report, released April 26, one of the many safety issues identified at the Site has yet to be dealt with satisfactorily. DOE's track record for correcting problems is poor, to say the least. Many problems are, by the DOE's own admission, unresolved. How can the draft EIS possibly get an accurate picture of operations with so many questions remaining?	Please see the response to Comment C-01-02 on safety.
C-51-03	Also, I believe that that the Environmental Impact Statement should take recent international developments and increased potential for arms control agreements into account. Congress is moving to cut funds for weapons systems. These cuts will affect the need for tritium production. Does the EIS consider these changes?	Please see the response to Comment C-18-02 on the changing world geopolitical situation.
C-51-04	Also, in relation to the cooling tower for the K-reactors, without which reactor operations will violate Clean Water Act thermal discharge standards, and which will not be completed until 1992. How can the DOE justify continued operation in violation of this requirement? It is a well-known fact that the history of the Savannah River Plant is a history of greed, of coverups, of lies and environmental contamination. That is why we are all here this evening. That is why I am here, because deep from my gut comes a very loud "no": No, I will not accept you; no, I will not accept your product; no, I will not accept the way you handle problems; no,	Please see the response to Comment C-36-05 on the K-Reactor cooling tower.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	I will not trust you; no, I will not believe in you; no, I will not agree that the K-, L-, and P-Reactors need to be restarted; and no, I will not settle back into an armchair, turn on the television, and forget you. As long as your presence is felt in South Carolina, you will feel my presence.	
	Thank you for letting me speak, and I will see you again at the next court battle or hearing.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-52	STATEMENT OF KATHY BROWN MS. BROWN: My name is Kathy Brown, and I work for the South Carolina Wildlife Federation. Although I do not represent them, I hold some of their views. First, I want to congratulate DOE on another euphemism. Back in the fifties, the plant was called "the bomb plant"; then, it changed to "Savannah River Plant," as if they produced rivers. Then, it became "Savannah River Site," kind of like a natural wonder, like you take the kids to see the Grand Canyon. Anyhow, I thought that that was kind of moot. Anyhow, last year, I did testify in Savannah. Like a former speaker, the first thing that I noted on page 1 was "...What is the Need?" I immediately flipped to the back, last page, and there is a little paragraph. So, anyhow, they will not tell me what their definition of "need" is, but I do have a definition of "need" for myself, which to me is, some of the things that are happening in our state that we have a need to deal with. The first thing that comes to mind is poverty. If you look at the vital statistics in the local library, people living below the poverty level in our state — we might rank No. 9. That is one ding-dong for us: No. 9 out of the rankings for poverty. The second thing is crime. Federal and state prisoners per population, No. 4. That is pretty good. Lack of education: People over 25 with less than a high school degree, No. 6 out of the country. It is all out there. Teachers' salaries rank No. 34. As far as average life time in numbers of years — in other words, who lives the longest and who dies the soonest, we live the least longest, No. 49. In unwed mothers, though, No. 5. Infant mortality, as another speaker said, No. 2. Elderly health care: Half a million folks in our state are on Medicare, No. 13 in the country. When I think of these things, and I hear some speakers say that a greater need or a greater threat of security risk, I am often reminded of that caption in "The Far Side" — I am sure many of you read it; if you are here, you are obviously "Far Side" fans — and that is the fish that are outside their fish bowl, and there is a little fire going inside the fish bowl, and they are all sitting outside, going, "Phew!" And one of the turns to the other and says, "Of course, you know, we are now equally screwed."	Please see the response to Comment C-01-01 on the need for tritium and other nuclear materials.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-52-02	So, that is how I kind of feel with the situation going on with human needs that are not met. We cannot even get something as simple as a recycling program off the ground in our state because people are worried that it will cost too much money. Yet, we spend 80 percent of our tax dollars manufacturing weapons. We do not need more bombs; we need to meet more real human needs. I am often reminded of the commercial — you have probably seen it — against cocaine. It says, "Cocaine makes you feel like you have power and mastery" — that rings a bell somewhere. You are supposed to know that someone is a cocaine addict when they start spending disproportionate amounts of money on something that brings them power and mastery. We are supposed to say, "Just Say No." DOE must go to the government and say, "First of all, know the 12 steps. First of all, you have to admit that you have a problem" — — and then, you have just got to say no." And the commercial ends, "Stop the madness." I concur that we will hardly hear that we have got to stop the madness, that we have got to stop the restart of SRP, better known as — let us call what it is — <i>the bomb plant</i>. Thank you very much.	The need for nuclear weapons is beyond the scope of this EIS.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-53	STATEMENT OF MS. HEATHER LYNN SWALLOWS MS. SWALLOWS: My name is Heather Swallows, and I represent Students for the Ethical Treatment of Animals. It is an environmental and animal rights group out of the Irmo High School. I am 17 years old, and I am too young to vote, and many people think that people my age and younger are too young to understand this. That is not true. We are the people who will feel the effects of this. Our future generations are the ones who will be at risk and who will face the huge consequences of this, if they live at all. As a resident South Carolinian — I have lived here all my life — it is frightening — the Savannah River Plant. It is frightening to know that if you go outside, that there is a chance that you are getting radiated. You are scared to drink the water. I do not like having to grow up in that. I do not want to have children who have to grow up in that. In this day of environmental awareness and peace talks, this is an extremely ironic thing. Right now, Bush and Gorbachev have had big talks on the complete ending of the nuclear arms of the nuclear arsenals, and right now, we want to restart it. I do not understand that. With the recent Earth Day and many people getting into the environmental craze, people recycling — it does not make sense to dump 200-degree water into the streams and to kill all the wildlife in South Carolina and Georgia. That is not right. I did not really prepare a speech for this; I did not write anything down. That is really all that I have to say. There are so many things that are wrong with the restart that there is no way that you can state them all. I think that it is really sad that we have, as the young woman with her child and the young boy, Matthew — it is sad that people our age have to get involved with this, that we have to grow up in a society that is killing us. That is all I have to say. One thing that I did notice here, too, when I came in was the styrofoam cups.	Section 4.1.6.4.4 discusses the cumulative impacts of thermal discharges.
C-53-01		

C-747

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-54	STATEMENT OF MS. ANASTASIA EDDINS	
C-54-01	MS. EDDINS: Hi. I am Anastasia Eddins, and it is IDEA, which is Irmo Direct Environment Action from Irmo High School. First of all, basically, the first hearing I went to for an environmental cause was friendly Allied Chemicals. I went in, sat down in a room, and I had a lot of pretty important people tell me that the records of all their chemical dumping were lost in a cardboard box in a schoolhouse. So, basically, I think that there is no difference here. If you cannot tell us the facts, then, obviously, maybe you do not really know what you are talking about. What we are talking about here is not some political problem; it is lives. It is like killing people. And I was sitting back there, and a man said, "You know, I agree with what they are saying, and they do not seem to understand." We do understand what you are doing, we understand what this plant gives us. The byproducts of this are just appalling and disgusting. I see all the executives sitting up here — nothing seems to affect you. I mean, if this is not enough, the decisions that you make today do just affect us and our children; they affect you and your children, and it affects your lives. I mean, if you sit down and look at yourselves and look at the decisions that you are making, it might be a little bit more helpful. The so-called ingredients SRP produces are to make a nuclear bomb. And these bombs are supposedly for our protection, and they are needed to save our lives from our big, bad enemies. And obviously, this is not any kind of protection; this is a kind of destruction. This is destroying our lives by having this plant here. And I have protested this plant many times, and I just really feel that this is a wrong in society. This is not just talking about an environmental need; it just kills wildlife, plant life, and it kills human lives. Like I said, it is pretty appalling and disgusting, and I think that many people sitting here right now can make a decision to shut this thing down. Thank you.	Comments noted.

C-748

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-55	STATEMENT OF MS. NANCY PEEPLES	
	MS. PEEPLES: My name is Nancy Peeples. I came tonight because my daughter made me feel guilty about complaining about the Savannah River, but never doing anything about it.	
C-55-01	And I guess that basically what I wanted to say is that my husband works for one of the clean industries in South Carolina, and they recruit heavily as far as, you know, very well-educated people to come in and work in this industry. One of the primary things that these people ask him when it comes down to, "Do I want to come to South Carolina to live, to work, to raise my family?" is, "how far are you from the Savannah River Plant?" And these are people from Colorado, California — this is what our state is know for: the Savannah River Plant. It is not known for its beaches, its oceans, its mountains, or anything. And we South Carolinians need to take our state back. Thank you.	Comment noted.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-56	STATEMENT OF SUE JANE JOHNSON	
	MS. JOHNSON: I am Sue Jane Johnson. I am affiliated with the Grove, but I am speaking for myself tonight.	
	As a lot of you have heard many times — but, I am going to say it again — my daddy worked there for 15 years. And I grew up hearing scare stories every night about this place. He worked in maintenance, so, everything that spilled, everything that broke, everything that leaked — my daddy was there. My daddy was radiated many times. He worked in areas that were so hot that he could only work there for one minute. The Department of Energy — Dupont, at that time, ran the plant — paid him huge amounts of money, you know, to go in there and get these huge amounts of radiation — \$100 a minute. Our "bomb plant baby" — that is what we called ourselves; can you believe that?	
	We were brainwashed with all this propaganda that my daddy was saving the country, that this was so vital for national defense, and that the radiation would not hurt you; you could eat it. Sure, you got it on your skin, but they would keep my daddy for a couple of days, give him lots of showers, give him lots of fluids to drink, and then, send him home. God knows how hot he was when he walked in the front door, you know.	
	Bless his heart, he is dead now. Your heart is a muscle, and my daddy's heart mysteriously deteriorated — you know, "mysteriously," I beg your pardon. Anybody that got as much radiation as my daddy got, you know, is bound to deteriorate. He also was in and out of leukemia until he died.	
	In the late seventies, I picked up the paper and it said, "No spills, no accidents" — all these lies, you know. My whole experience with the bomb plant has just been a pack of lies, my whole life. And there are four issues that I want to address: safety, public health, environment, and the absurd need.	
	Safety is a joke. My daddy last worked there in 1969, and he told me, over and over again, "You could poke your fingers through any pipe on that plant, that is rotten and corroded those pipes are." You know, we have spent how many millions of dollars in the	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	last few years, fixing these plants up. No way. No way. Anything that old, that rotten, and as unsafe as those plants were to begin with — you cannot fix those things. You know, it is absurd; it is absurd to think about that. It will never be safe; it has never been safe, and it will never be safe.	
	Public health. I am real curious to know how many people who started there in 1954 are now dead. You know, everybody that my daddy went to work with are all dead, all his buddies. We used to get together for these Sunday afternoon brunches in Aiken, all these families that were brainwashed. You know, we had these great propaganda tours. I got the special tour at Christmastime, okay? I got to go in and see the reactor; I was blessed. The families got this wonderful tour of getting to go in and see the reactors. Thank you so much, you know, that is great. You know, do not talk to me about public health and public safety.	
C-751 C-56-01	Why will you not release the statistics of my daddy's health records? I know how it feels to be radiated. You call me up and talk to me, a little kid, on the phones and say, "Well, your daddy got too much radiation, so, we are going to keep him for a few days, you know." And that is how I grew up. You will not release statistics of how many people have worked there and died, any kind of health statistics. I demand right now that you release all the health records of everybody there. I demand that you do studies — all kinds of studies — on the health effects on the workers there and the people in the surrounding communities.	Appendix B (Section B.1.5) of the EIS describes previous and current epidemiological studies of SRS workers and the general public. Please see the response to Comment C-15-04 on a recent study. Secretary Watkins has announced on several occasions that DOE is releasing health records of all its employees to qualified researchers. Former and current employee health records are available to appropriate persons on an individual request basis.
	WHAS said on TV the other night, "Well, we had this great release out on stacks in the Savannah River Plant in 1970." And how about that, all these babies died, you know. And then, they go on to dispute it and say, "Oh, yeah, but, if that happened, the babies would still be dying." I have got news for you: They are still dying. We are, like, second in infant mortality in the nation. Why? I have got a good answer to why. You know, plants have been spewing out stuff for 35 years now. It is absurd; do not talk to me about public health when you all care nothing about us; we are sacrifices, and that is all we are. It is absurd that we will sit here in this state and take this.	
	You have got to release all the health records of every affiliated with the plant and everybody around the plant in every way.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	Okay, here we go with the environment. There is no use. You do not need to go to Hollywood to see "Mutant Ninja Turtles" people; we have got them crawling around the plant—	
	— along with the poor mutated deer, the poor fish that are deformed, swimming everywhere. You know, God help us as to what is crawling and jumping the fences and getting off of this place — people who are hunters and fishermen. You are in a rural community, you know; these people hunt and fish everywhere around there. You cannot stop these animals — the birds who land in these huge open waste ponds. You know, forget it. They land, they fly off. It is horrible, it is a nightmare.	
	The radiation and just the heat. It is absurd what you all have done with that piece of land. And we are talking about a piece of land that is spreading. All its waste is seeping down into our water. It cannot be any more of a nightmare than it already is.	
	What everybody keeps saying over and over is that what is happening all over the world, and happening in Europe — we are the war mongers of the world, people. We are the war mongers. The whole sight of this tiny little planet. You keep hearing the astronauts — okay, they go off into space and look back, and what do they see? This precious little, fragile blue ball and all this vast nothingness. This radiation that we are making is the biggest cancer on the face of this earth, of anything that has been created yet, and we have got to stop this. You know, we have got to stop it; it is crazy; it is insanity.	
	The first page of this absurd document that is supposed to mean something, Chapter I, page 1, "By law, DOE is charged with producing defense nuclear materials." People, go straight to your Congressmen, you know, make a vow, make a pledge to yourself today that you are going to get to know your Federal representatives, you are going to be in contact with them on a monthly basis. You are going to tell them that we are not going to take this anymore. We do not want to be sacrificial lambs to perpetuate this war monger weaponry for the whole world. Twenty-three thousand nuclear warheads? You know, we shoot out a thousand and I do not think that we are going to know life as we know it any longer. And get fired up; get to know your Federal representatives; get in touch with them once a month. Set yourself a goal that you are going to recruit one	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
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	other person, that you are going to tell them, "You should be upset, you should be angry, you should be concerned." And just be anything but apathetic. I urge you to get out there and do everything that you can to stop this insanity. Thank you.	
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Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-57	STATEMENT OF PETER TEPLEY	
	MR. TEPLEY: My name is Peter Tepley, and I am a citizen of South Carolina.	
C-57-01	The term "national security" really scares me. Yet, most of my life, it has been used to usurp public accountability. It appears to me that it is being again so used. As one of the citizens whose security is to be protected by the weapons materials produced at this plant, I see no need for restart. We currently have a more than adequate arsenal of nuclear weapons. Without ever producing any new tritium, we could probably destroy the world for the next 50 years. However, we are pitifully inadequate when it comes to true cleanup of nuclear and hazardous wastes; in fact, what we call "cleanup" is basically moving the wastes. We must develop technologies to clean up our environmental disasters, of which SRS is just one. These technologies must provide for full protection of the workers' health and safety. We have got to figure out what to do with these materials, these toxic substances and radioactive substances that are pouring into this state or that have been produced in this state and are sitting here.	Please see the response to Comment C-01-01 on the need for tritium. The need for nuclear weapons is beyond the scope of this EIS.
C-754 C-57-02	The reasonable approach, it seems to me, would be to place the reactors in cold standby, although, I am not sure that that is even necessary, and undertake the true cleanup -- not just the movement of waste -- of the mess that already exists. As others have pointed out, the \$25 billion estimated cleanup can surely employ all existing employees in comparable jobs, as well as create new jobs. And these new jobs will be jobs that can be taken to other parts of South Carolina, to other parts of the United States, and to other parts of the world. While the reactors are in cold standby, they should be brought up to at least current commercial safety levels, if they are ever planned to be restarted.	Please see the response to Comment C-05-03 on waste management and environmental restoration.
C-57-03	Additionally, the Department of Energy should release all health and environmental data for independent review so that the full effects of the Savannah River Plant on South Carolinian citizens and environment can be known, and so that appropriate safety measures can be devised, should restart ever be required, which I hope, it never is. Keeping this information from us cannot in any way enhance national security. The risk assessment should be promptly	Please see the responses to Comments C-05-03 on environmental restoration and C-35-06 on health information and its publication.

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

completed and put through independent review. These measures are required to ensure that the health and safety of South Carolinians and the quality of our environment are no longer ignored.

The approach that I have outlined here seems a reasonable balance between national security concerns and the protection of South Carolina. To restart the reactors now will tell all South Carolinians — in fact, all citizens of the United States and the fellow people who are on this earth with us — that South Carolinians do not matter, and that the government is more interested in producing unnecessary nuclear weapons than it is in truly protecting the citizens of this state and our environment. Thank you.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-58	STATEMENT OF MERRILL TRUESDALE	
	MR. TRUESDALE: Ladies and gentlemen, we are at a time when the hour is getting late. I am not necessarily talking about with these hearings; I am talking about in the sense of our civilization as we know it, as it is. We look at the situation of the Savannah River Plant, also known as the bomb plant, that this plant was built for one purpose, and one purpose only — and that purpose was the production of nuclear weapons. Since that period of time, we have found out that we have met the enemy. The enemy is not the Soviets, it is not the Chinese; it is production of the nuclear weapons by ourselves.	
C-756	We have to focus in on the safety aspects of this plant because right now, we are at crossroads. We are at a crossroads where, as human beings, we have a chance to survive peacefully without these weapons. Conventional warfare alone is tragic; we do not need nuclear weapons. We also do not need, in fact, all the safety violations that have gone on rampant with this plant, over a period of time, that have been covered up, and have not been acknowledged until the last year or so. We have to think about what we are doing to our planet, to our environment, and its effect on our state and nation. Is this plant that vital to the economic situation of the state of South Carolina? No, it is not; not in that aspect of it. We have to look for a long-term goal of being able to clean this area up, to shut it down, and utilize what we possibly can for peaceful purposes. This is one of the things that never ceases to amaze me. I have come up here quite a few times to testify, and it seems like we go go back to square one. The time is now to start cleaning this place up, to get our groundwater back — if we are able to. But we have to have that responsibility; not only us, but DOE has to be very sensitive to this. And I really do not beleive that DOE really cares about this issue that much, except being able to get these plants back on line. People that I know of in this state are very outraged about this plant. It is not because of apathy that the people do not do anything. Sometimes, they feel like it is beyond their control. This is something that is wrong, though — we have to take that	The need for nuclear weapons is beyond the scope of this EIS. Please see the response to Comment C-01-02 on safety. Please see the response to Comment C-05-03 on waste management and environmental restoration.
C-58-01		
C-58-02		
C-58-03		

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
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initiative, because if we do not, the world as we know it, and the environment as we know it in this state and in this nation, is left up to our children, and then, their children. That is something that I do not want to leave as a legacy for anyone. The time is right to take the weapons and to beat them into plow shares, and to work for peaceful conversions so that humankind can go on and live the next few thousands or few millions of years that we have left in peace.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-59	STATEMENT OF ANDREW CRAIG VARNER	
C-59-01	MR. VARNER: My name is Mr. Andrew Craig Varner. I am speaking here as a citizen of the state of South Carolina, as a citizen of the United States, and as a citizen of the world. I would like to thank you for having this hearing. My question is, are you hearing what we are saying? These hearings have been held over and over; people do not seem to listen. We are living in a nuclear age when nuclear weapons potentials are measured in kilotons or megadeaths, where a 100 kiloton weapon will give third-degree burns to a person five kilometers away; it will cause 90 produce tree blowdown two kilometers away. If you are two kilometers away, you have a 2 produce chance of living. If you are one-half kilometer away, you have 100 produce chance that you will die within 14 days. If you are within 1.3 kilometers, there is a 100 produce chance that you will die within 15 to 48 hours. DOE wants to spend one million dollars on the B-83 bomb, the bomb that powers 70 Hiroshimas. In Hiroshima, the energies involved burned people's shadows onto the walls. They also want five billion dollars a year to clean up the Savannah River Site by the year 2020. I heard a man come up here and talk about the pain from his experience of being shot in the stomach. In Hiroshima, people's shadows burned on the walls. People's eyes were running down the sides of their cheeks. Their skin was burned off. He said that he absorbed large amounts of radiation because he loved his country. I am not willing to absorb that radiation, and I am not willing for my children to absorb that much radiation. I am here for my children because I do not think that they want to have us put up with it. I am here so that my children do not have to put up with it. It makes so much sense. They will not live in a country that is invisible, with plutonium and strontium for all. Public safety is a part of national defense. Thank you.	Please the response to Comment C-01-03 on public comments.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-60	STATEMENT OF BRIAN PENNINGTON	
	MR. PENNINGTON: Hello. I am Brian Pennington, and I really do not represent anyway but, maybe, just the citizens of South Carolina. It really feels as if there is a responsibility of South Carolinians to keep the Savannah River Plant shut. In 1945, two atomic bombs were dropped on Hiroshima and Nagasaki. Each of those bombs was equal to 20,000 tons of TNT. Today's thermonuclear explosions release thousands of tons as much energy as an atomic bomb. There are 60,000 warheads on the earth, which is 4,000 pounds of TNT for every man, woman and child on earth. Why? Just the other day, Mr. Bush and Mr. Gorbachev met to limit the nuclear arms, which is a step in the right direction. Yet, at the same time, the Savannah River Plant is opening back up, a giant leap in the wrong direction. I do not know -- is it just me, or is this kind of stupid? At a time when the U.S. and the U.S.S.R are discussing major weapons reductions, our leaders should not be launching our countries into a new era of producing weapons materials. National security would be best served by protecting the health of people and the environment, rather than the health and longevity of nuclear arsenals. Opening SRS again is an irresponsible and unnecessary plan that could lead to an environmental catastrophe. Thank you.	Please see the responses to Comments C-20-02 on continued operation and C-18-02 on the changing world geopolitical situation. The need for nuclear weapons is beyond the scope of this EIS.

C-759

C-60-01

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-61	STATEMENT OF WILLIAM VOEGELE	
	MR. VOEGELE: I am William Voegele. I guess that I will be a citizen of South Carolina tonight.	
C-61-01	I just wanted to say that I think that it is totally ridiculous that you guys are even considering opening this place back up when the fellow just ahead of me said that if you start up again, you are going to create an environmental disaster. You have already got one. The excuses can go on forever about, you know, we need jobs, we need more nuclear bombs, but I think that it is jobs that you are worried about, you can spend more money than you could ever dream of that you spend on your bombs on cleaning that place up. It is a mess already.	Please see the response to Comment C-20-02 on continued operation.
C-760	I was just thinking, while I was sitting here in this hearing tonight, that I grew up down the river from that place, and I did not even think about it until the last couple of years, and I cannot even begin to imagine what a mess that river is to all the cities that live downstream from it. And you guys just cannot open that place up again. And I want to be on the record to say that I was against it. Thank you.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-62	STATEMENT OF LUKE PHILLIPS	
C-62-01	The world has changed drastically since December '88 when the last round of these hearings took place. We must change too—become more flexible and imaginative. As we applaud new democracies in Eastern Europe, we need to ask the question: "Are we always in favor of democracy for <u>ourselves</u>, or only when it's convenient?" When people were more trusting and naive, they welcomed to South Carolina what they called honestly and directly, "The Bomb Plant." We now have more bombs than any reasonable person can imagine, and a \$10 billion tab just to clean up the mess at the Bomb Plant. That's 3 times the yearly budget of the entire state of South Carolina. And to you up there at that elevated table, I'd like to say that there <u>is</u> a limit to Southern Hospitality. I'm glad you're not being subjected to the first draft of this message, because it was very rude, and somewhat offensive. I understand that it's part of your job to take a little abuse from the locals, and then go ahead and do what you've decided to do anyway. That's one reason you get paid a straight salary, and not by the hour. But I know that as well-educated and thoughtful people, weighing the evidence on your own personal scale, you must sometimes question the wisdom of cranking up the Bomb Plant again at all costs. If I were to present you with an alternate plan that would make a more lasting contribution to national security and world peace, as well as sustaining the local economy of Aiken and Augusta at current levels or better, would you consider it, just for a moment? Nuclear weapons are a product of fear, and the only rationale for having them is that eventually you're gonna be able to get rid of them without detonation. Now is the time to cut off production at the source, both here and in the Soviet Union. The plan is this: appropriate the \$10 billion to begin to clean up the neighborhood in and around the Bomb Plant, with a target date (say 1999?) of turning the whole shebang into a 300-square mile International Peace Park, with a nuclear weapons <u>museum</u>, and housing an international institute for the study of human and environmental concerns. Such a facility could conceivably be a key to controlling and reversing life-and-death problems like the greenhouse effect, depletion of the ozone, and acid rain. You may not be aware, but there's enough talent in South Carolina and Georgia alone to	Please see the response to Comment C-18-02 on the changing world geopolitical situation. Comment noted.
C-62-02		

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

envision and design an innovative institution that will be acclaimed world-wide.

The Soviets, of course, must agree to do the same thing at an equally strategic site in their country. On this point, I have a lot of faith in the U.S. Intelligence-gathering community. I'm sure they know where all the nuclear weapons production centers in the USSR, are. And the Soviets are obviously more receptive to such imaginative approaches than at any time in the nuclear era. How difficult do you think it would be to gain their enthusiastic cooperation? Shouldn't we try?

So, within a decade you could easily have two gigantic institutes to combat the staggering problems of the environment, and immediate human problems like mass starvation. These institutions would have at least \$20 billion to apply to the creative and positive solution of these problems, because we won't be pouring it all into the no-win, static realm of nuclear arms production.

As you turn this proposal over in your mind, I can imagine what you're saying - "This is too easy. This makes too much sense." Well if that's a good argument for not doing it, I guess we should just forget the whole thing.

Luke Phillips
Columbia, SC
6/5/90

Please see the response to Comment C-01-03 on public comments.

C-762

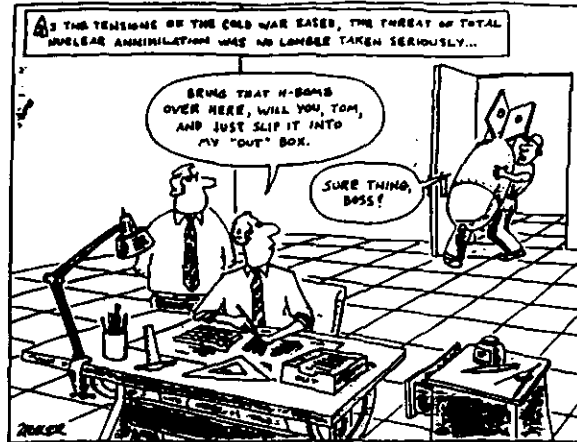
C-62-03

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response



TAKEN SERIOUSLY:

Creating a New Identity for The Bomb Plant

The world has changed drastically since December '88 when the last round of these hearings took place. We must change too — become more flexible and imaginative. As we applaud new democracies in Eastern Europe, we need to ask the question: "Are we always in favor of democracy for ourselves, or only when it's convenient?" When people were more trusting and naive, they welcomed to South Carolina what they called honestly and directly, "The Bomb Plant." We now have more bombs than any reasonable person can imagine, and a \$10 billion tab just to clean up the mess at the Bomb Plant. That's 3 times the yearly budget of the entire state of South Carolina. And to you up there at that elevated table, I'd like to say that there is a limit to Southern Hospitality. I'm glad you're not being subjected to the first draft of this message, because it was very rude, and somewhat offensive. I understand that it's part of your job to take a little abuse from the locals, and then go ahead and do what you've decided to do anyway. That's one reason you get paid a straight salary, and not by the hour.

Sorry about the "elevated table". That's the way it was set up last time

O-C-62
DOE/EIC-0147D
C- 26

C-763

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

2

But I know that as well-educated and thoughtful people, weighing the evidence on your own personal scale, you must sometimes question the wisdom of cranking up the Bomb Plant again at all costs. If I were to present you with an alternate plan that would make a more lasting contribution to national security and world peace, as well as sustaining the local economy of Aiken and Augusta at current levels or better, would you consider it, just for a moment?

Nuclear weapons are a product of fear, and the only rationale for having them is that eventually you're gonna be able to get rid of them without detonation. Now is the time to cut off production at the source, both here and in the Soviet Union. The plan is this: appropriate the \$10 billion to begin to clean up the neighborhood in and around the Bomb Plant, with a target date (say 1999?) of turning the whole shebang into a 300-square mile International Peace Park, with a nuclear weapons museum, and housing an international institute for the study of human and environmental concerns. Such a facility could conceivably be a key to controlling and reversing life-and-death problems like the greenhouse effect, depletion of the ozone, and acid rain. You may not be aware, but there's enough talent in South Carolina and Georgia alone to envision and design an innovative institution that will be acclaimed world-wide.

The Soviets, of course, must agree to do the same thing at an equally strategic site in their country. On this point, I have a lot of faith in the U.S. Intelligence-gathering community. I'm sure they know where all the nuclear weapons production centers in the USSR, are. And the Soviets are obviously more receptive to such imaginative approaches than at any time in the nuclear era. How difficult do you think it would be to gain their enthusiastic cooperation? Shouldn't we try?

So, within a decade you could easily have two gigantic institutes to combat the staggering problems of the environment, and immediate human problems like mass starvation. These institutions would have at least \$20 billion to apply to the creative and positive solution of these problems, because we won't be pouring it all into the no-win, static realm of nuclear arms production.

As you turn this proposal over in your mind, I can imagine what you're saying — "This is too easy. This makes too much sense." Well if that's a good argument for not doing it, I guess we should just forget the whole thing.

— Luke Phillips

Columbia, S.C.

6/5/90

C-764

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-63	STATEMENT OF DAVID WATRING	
	MR. WATRING: Thank you. My name is David Watring. I am not from South Carolina; I am from West Lafayette, Louisiana, and if I am representing anyone, I would say that I will represent the citizens of South Carolina, the ones who were too lazy to get off their butts and come out here tonight, who were too apathetic or maybe too afraid of you people to think that they could change. I would also like to represent that the children of my sister and my brother-in-law, my niece and my nephew. And I would like to also represent all the people that I have met here in South Carolina with children who were worried that they have to feed their families tonight or had to clean up the kitchen or something. I am here for them.	
	Like I said, I am not from South Carolina, I do not live here, but I am afraid. I am afraid for more than South Carolina; I am afraid for the world. I have sat and listened to these mothers at the park, at the playground, playing with their children, and listen to them, how they have said how many of their family members and friends have had tumors or cancer or something else. These people are young; young people in their twenties, and other people, that are having these cancers. And where is this coming from?	
	These women are all voters, and they do care about this, and their husbands care about this also. And you men will be voting, and I hope you vote your conscience because it does not take a genius to know that to make nuclear weapons and to open up the plant is wrong. It is stupid. And it has been said that it is easier to get a camel through the eye of a needle than to get a rich man into heaven. Vote your conscience.	
	I am afraid. I am afraid for my niece and my nephew. I am afraid for their grandchildren, their grandchildren's grandchildren, and their great grandchildren's great grandchildren. That is who I am here to speak for. I am speaking for the future of our earth.	
	I did not plan a speech; I only came here to hear what people had to say, but I am scared. I am scared. I am shaking up here, and I have to say what I have to say. I hope that you vote your conscience. It is not only our problem, but a problem of the people	

Table C-7. Public Comments and DOE Responses

Comment
Number

Comment

Response

C-63-01

of the world. It is morally wrong to destroy when the targets are women and children. What difficult does it make? We can destroy the planet ten times over? I would rather be an alive and vital person, with my hair left, than have the future of our children destroyed and people wiped off the face of the earth.

These nuclear weapons are in excess. They make us no safer. I am scared, because if you live by the sword, you die by the sword. And if you live by the bomb, you will die by the bomb. It does not take a rocket scientist to know what is wrong here. Your excuses that we need a nuclear deterrent — I do not think so. I think that there are enough nuclear bombs out there. With what is happening in the world with Gorbachev coming over here and sitting down and talking, and we are already reducing our arsenals, why are we building more bombs? There are enough social problems that we could take care of. The excuse that you have is nuclear deterrence — I do not think so.

And your other excuse is that we need jobs. Well, I think that Westinghouse should stick with making toasters.

They break enough, anyway. You say that jobs will be affected. Well, how about spending some of our tax money — even though I am not a resident of South Carolina, I am sure that my taxes have paid for this — spend some of our tax money, trying to make this world a better place for our grandchildren, our great grandchildren's grandchildren, instead of spending our money on something that can destroy the world, destroy life as we know it.

I hope that you men vote your consciences. I hope that you do, because you do not know what could happen in the future, you do not know what could happen if there is an accident there, being such an old, feeble plant — you do not know. You think that you know, but I have heard the lies, and I do not believe them. I am scared. You should be scared, too. Everyone in this room is scared. That is why they are here. The other people, I do not know why they are not here, but you should feel the pressure, you should feel what they feel. That is all I have to say.

Please see the response to Comment C-18-02 on the changing world geopolitical situation. The need for nuclear weapons is beyond the scope of this EIS.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-64	STATEMENT OF SANDERS MACMILLAN	
	MR. MACMILLAN: Okay. My name is Sanders MacMillan. I am a free-thinking youth. I feel that it is time for our government-	
C-64-01	-- I feel that it is time for our government to climb out of its bomb shelters and realize that the world is now a more peaceful place to live. But there is something about becoming a bureaucrat, as you all well know, that blinds your judgment with ignorance and compliance. But please forget what the war mongers at the Pentagon are saying, and heed the desperate cries of your people. Do not restart the Savannah River Plant. Thank you.	Comment noted.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-65	STATEMENT OF ROBERT OSMER	
	MR. OSMER: My name is Robert Osmer. I have no fancy speeches or any fancy phrases or anything like that; I just decided to speak, coming over from Burger King.	
	All I have to say is that I have been listening all night, and I have decided that I am not old enough to vote, and I am not old enough to die, but I am old enough to make a rational decision when I look at the facts. I can read, I can understand, I can comprehend when I look at the facts. I read magazines, newspapers, everything, from both sides of the argument. And then, I can formulate an opinion.	
C-768	And I have formulated my opinion; this is what I am trying to say: SRS makes no sense at all. Excluding all the facts, from both sides, you can look at it from just feeling sort of way. It is old; it is run down. It is got bad policies, bad records; there is absolutely no reason for it to be even restarted. And I would like to look down here at this little "speaker" sign — I do not like it; I would rather it be "activist," not "speaker" because I feel that it is my part as a citizen to represent all those people down there surrounding the Savannah River Site area. And I have relatives down there, I talk to them frequently. They hunt, fish and all that; they do it a lot but they are not stupid enough to even eat the fish out of the Savannah River, so, take that into account — let us hope.	
C-65-01	That is really about all that I have to say, other than I still cannot understand at all why we need the tritium. I do not understand. I mean, we have already brought up all these facts. All these speakers have come up here and stated all their facts about how long we can stand without more tritium and all that, and why put lives in jeopardy for something so futile. Thank you.	Please see the response to Comment C-01-01 on the need for tritium.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-66	STATEMENT OF WARREN WHIPPLE	
C-66-01	You have heard, here, and in Savannah last week, a number of impassioned pleas from individuals wishing for the DOE to reconsider this re-start. You have heard some thoughtful, detailed analyses, you have caught some scathing attacks, you have heard some very heartfelt, sincere emotional pleas. You have also heard a large number of these people tell you that they felt that this hearing is a sham, that you are not really listening to us, just going through the motions.	Please see the response to Comment C-01-03 on public comments.
C-66-02	This can be envisioned in two different forms. Either the outcome and conclusions of the Final EIS will have little or no effect on decisions that have in essence already been made, or the outcome of the final EIS itself has already been determined. At the conclusion of these hearings, you will be writing a report. What is important here is what goes into that report. A lot of good people are depending on you to relay honestly and pointedly, to Mr. Watkins and the powers that be, what has been expressed here. Mr. Patterson, I believe that you will do that.	Please see the response to Comment C-01-03 on public comments. DOE plans to publish the Record of Decision on the continued operation of K-, L-, and P-Reactors following a 30-day waiting period after notice is published in the <u>Federal Register</u> regarding the filing of the Final EIS with the U.S. Environmental Protection Agency.
C-66-03	What I do fear, however, is that the final EIS will not impact the re-start. Every path in this maze seems to lead back to the Nuclear Weapons Stockpile Memorandum that Mr. Reagan signed on his last days in office. The DOE must re-start SRP because the NWSM demands it. Period. And this is where this game gets fun. It's a highly advanced version of "hot potato" that we call the "Washington Shuffle". Mr. Watkins is not responsible for the decision to re-start because the NWSM says he has to, regardless. Reagan can't be held responsible because this dramatic change in the world scenario has all occurred after he left office. Bush is clean because he didn't sign it, and there is no precedent for a President changing a NWSM in mid-stream. Things just are the way they are and that's that. Neat, huh? There is always a weak link in the deniability game, and the way this one seems to be set up, Mr. Watkins is it. Twenty-odd years ago, on the other side of the world, in a few bloody hours in a little village called My Lai, the issue of escaping culpability for felonious conduct by claiming one was just following orders was forever laid to rest. Ask John Poindexter. Ask William Calley.	President Bush approved the latest NWSM on July 12, 1990.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	The K, L, and P reactors at SRP are old. They have a shaky history. Even the rosiest of projections must acknowledge that this is a very risky undertaking. This is one of those kinds of plans that if every thing goes right, it might work. But if Anything goes wrong, this observer believes that Reagan and Bush's pick and roll play will probably work. They may just be remorseful as all hell, but neither will fry for it. That honor will fall to Mr. Watkins. And just how much good do you imagine that memordandum will do him then?	
C-66-04	Mr. Watkins needs to ask himself a very hard question. Is whatever it is that is in this for him worth the fall he has been set up for if there's an accident, and it comes out that maybe we really didn't need all this much more tritium right then, after all, and maybe some people knew it? If yes, then this is all pointless and we'll continue this fight in the courts, and in a direct assault on the White House. But if there is any doubt, I implore him, for his own sake as well as all of ours, to do what any private would do when given a questionable order, what any middle manager would do when handed a shaky project based on out of date research. Question the order.	Please see the response to Comment C-01-01 on the need for tritium.
C-66-05	Request, possibly even demand, that President Bush formally re-evaluate the NWSM. To do any less at this juncture, given all that has led up to us being here today, all the things that have been said here, and all the things that both sides know about this project, would be very, very, very, naive. Thank you.	Please see the response to Comment C-66-03 on the NWSM.
	Warren Whipple	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-67	STATEMENT OF MOSES TODD	
C-67-01	MR. TODD: My name is Moses Todd. And I grew a little beard. I thought that it would be easy not to be recognized from Savannah, but I look like most of my other friends who are here from Savannah also, and a few that were not there. It is nice to be here in Columbia tonight. I have given a lot of thought to a lot of things that have been said. The bottom line is, you know, there is a finger pointing pretty much to that there are misconceptions, misgiven facts, misinformation, etc. And you know, being basically that we have been kind of outnumbered in Savannah, I felt like John Custer down in Savannah, and basically hear that the misconceptions, as I can see them, are coming from individuals who are not held accountable for what they say or have to say. And I base that on the fact that, you know, we are not in a court of law, and we do not have to give facts or points of law, but the Environmental Impact Statement, the public comment released, has to be basically the facts, you know, of what exists out there and reasons for restart. And basically, anything that I say or anyone else says that comes up here and sit down, you know, we are on a campaign to shut out SRS or a mission to shut down SRS or to restart SRS; therefore, if we are not basically honest people, we can just throw anything out there. And the ground rules are that that cannot be challenged. And you know, that is one thing that we must realize. And saying that, I want to comment on a couple of things. Yes, I am an employee of SRS. You know, that is the reason for the appearance — I left work and came here. When I left SRS this evening, the grass was still green, the sky was still blue, the birds were still singing in the green trees, you know, there. And even where New Ellington used to be in the springtime, the flowers still bloom there. So, the animals, you know, are still there; the hunters come every year, every fall, and hunt SRS. There is a hunting club there, as many of you know. But there are hunting clubs all over the great state of South Carolina. There is a hunting club there on SRS. And individuals get passes, you know, to come out and hunt. And I have not seen any of those deranged animals or people or birds or fish. I fish the Savannah River.	Comments noted.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	I would like to think of myself as an environmentalist. I think that most hunters and fishermen would like to think of themselves as environmentalists. So, do not think that you have a trademark on being environmentalists, you know; we are, too.	
	But I have a different point of view than most of you have in reference to need for SRS, and not because I work there, but because, like the gentleman who spoke before me in support of it, that my Vietnam common sense tells me that there is a need. And as I stated in Savannah, that approximately a billion or so Chinese tell me that there is a need. That fact that Communists still exist in this world tells me that there is a need. Now, I do not disagree with you on the cleanup; I do not think that any rationally-minded person would disagree with you as far as cleanup. Cleanup is happening, cleanup is in place. There have been monies spent on cleanup, you know, as I speak, as I stated in Savannah.	
	The point of the cooling tower, you know — that is debatable. And the way that I look at the cooling tower and the "L" lake — and I have firsthand experience from being out there — is that, you know, it is kind of like the ultimate which comes first, the chicken or the egg. The L-reactor was built and the "L" lake was built or dug to accommodate the reactor and the thermal waters that we are talking about that were pumped into this lake. Now, you say that we should not pump the water into the lake; why should you not pump water in a lake that was built for that purpose? I am not saying that, you know, that a natural habitat has not taken place there, that there are not some things in "L" lake that may be damaged by the pumping of this water; but, to come back and say that we should not spend money that is for cleanup — you know, designated for cleanup — to build a cooling tower that is going to handle the water and take care of the thermal problem that we are pumping into "L" lake — that is not part of the cleanup. I cannot, you know, reason with you there, either because, in my opinion, that is not production; that is something that you mandated, and I think that a court decreed on, to not pump the hot waters in "L" lake in reference to the time that the L-reactor would be put on line. So, basically, I have a problem understanding, you know, where you are coming from on many of your issues. And I am sure that others have that same problem, you know.	
	I vigorously support a cleanup of any situation where you have possibly past dumping because the conscience level possibly was not	

C-772

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
	there for it at the time, or national security possibly outweighed, outweighed, you know, the situation as far as cleanup at that time. But, I just have some serious problems. I want to support your philosophy, I want to support your position of being environmentalists and that you are, you know, sincere about this thing, are serious about it, and that, you know, you really want what is best for this country and for this nation, but I cannot wholeheartedly agree with you, and I do not wholeheartedly disagree with you on all the issues.	
	But I feel that we must have a nuclear capability, that we must protect the national security of the United States, and that we must never put our young men whom we are going to send to fight a war in the position that we put them in at the start of World War II, when we were mobilizing them, or in the position that we put them in in Korea, when some 600,000 Chinese marched across the lines there, and a lot of them got trapped at the back of that line. I do not think that we should ever put them in the position that this country put me in in Vietnam. And I can remember, you know, in the sixties that there was a group that we called the flower children, you know, of the day, of that day. And the difference between I and them is that I was sent to Vietnam; they went to Canada. And I would just like to thank you for allowing me to speak.	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-68	STATEMENT OF DAVID REYNOLDS	
C-68-01	MR. REYNOLDS: My name is David Reynolds. And that beautiful boy over there is my son, Franklin. And since he cannot talk yet, I am going to speak for him, also. I am employed with the South Carolina Department of Mental Health. I work on a very personal basis with patients in the hospital. I do not know if many of you know about mental illnesses, but they are very debilitating diseases. And a majority of the patients come from Charleston, Georgetown, Aiken, Orangeburg. I will let you make your own conclusions about that. But he will be turning two years old tomorrow. Yesterday, I was watching Mr. Gorbachev on TV, making a speech. And when I was in the Army, we had to wear our helmets when we went into the field so that the Soviet satellites could not see where we were at and know our training missions. Now, if their technology is that advanced, where they could see a man moving around in the field from outer space, they probably know that the Savannah River Site is the only place in America that makes tritium for nuclear warheads. And if it ever restarts when peace negotiations are going on, then, that is just like pointing a gun right at our heads, right at my boy's head. And whether that trigger is pulled by ourselves with the meltdown or by the Soviets, because that is what would most probably be one of their first strike locations, we will be dead. That is all I have to say. Thank you.	Comments noted.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-69	STATEMENT OF MAXINE WARSHAUER	
C-69-01	MS. WARSHAUER: I testified at the scoping hearings, and I received the EIS statement from the Department of Energy. And the question, as it seems to be posed, is, do the costs of maintaining the Savannah River Plant justify — do the benefits justify the costs? And we know that there are costs — there are monetary costs; it costs money to operate the plant. There is a cost to the environment. There are continued dangers that the environment is being exposed to, in addition to the possibility of accidents which, no matter how careful we are, there is always a possibility of an accident, and this has been documented in the past, some of which we have not been informed of until afterwards.	Chapter 4 of the EIS discusses environmental impacts and the probability of accidents.
C-69-02	So, those are some of the costs. The benefits would be increasing our stockpile of plutonium and tritium. And I would maintain that at this point in the international political situation, we should hold off — we should hold off on restarting the plants. I think that our first choice, our first thrust should be toward the arms control agreements. I read in the paper yesterday that there was some possibility of having one of the plants on standby if it were necessary. I would certainly prefer that to going ahead and restarting the plants. Thank you.	Please see the responses to Comments C-01-01 on the need for tritium and other nuclear materials and C-18-02 on the changing world geopolitical situation.

C-775

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-70	STATEMENT OF GUY JONES	
C-70-01	MR. JONES: My name is Guy Jones. And I will keep this very brief since everyone looks like they have been here a long time. I own a business called River Runner. I just got off the river; that is what I do; I conduct river trips. But I would just like to state my feeling that we really do not need to have more of our resources put into nuclear weapon production. I think that now is the time to think seriously about slowing down the process of building bombs and put our efforts into cleaning up the Savannah River Site. That is my feeling, and that is what I would like to say. Thank you very much for the chance to be here.	Please see the response to Comment C-05-03 on waste management and environmental restoration. The need for nuclear weapons is beyond the scope of this EIS.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-71	STATEMENT OF SUE ROSSER	
	My name is Sue Rosser. I hold a Ph.D in Zoology. I am currently an Associate Professor of Preventive Medicine at the Medical School and Director of Women's Studies at USC.	
	I would like to request that the agency consider issues surrounding the health risks to the citizens of the Savannah River Plant's Nuclear Reactor.	
C-71-01	Certainly the type of health risks of the Chernobyl accident in Russia cannot be excluded in the event that a similar accident were to occur at the Savannah River Plant. Apparently the new reactor will have a massive concrete and steel containment dome which would be the last defense against radiation, but the environmental impact statement does not appear to include an assessment of the health risks to the citizens of a failed reactor and possible leakage even with a dome.	Please see the response to Comment C-14-02 on Chernobyl.
C-71-02		See the response to Comment C-38-01 on NPR; Section 4.1.3 of the EIS presents the risks of severe accidents, including the failure of the confinement system.
C-71-03	At least as important as the health consequences of a nuclear accident or failed reactor, are the health effects of the chronic low level doses produced by the release of radioactive tritium into the air. A study published in Sept., 1988, in the <u>American Journal of Industrial Medicine</u> authored by Dr. Donna Cragle, an epidemiologist at Oak Ridge Associated University, showed an overall death rate among white male employees at SRP to be less than the national averages. However, that same group suffered more than twice the national rate of leukemia deaths. Specifically, among the 1,274 workers hired before 1955 who worked at the plant for more than five years and less than sixteen years, six persons died of leukemia. Only 2.18 leukemia deaths should have occurred to be in line with national statistics.	DOE describes the cited report and references it in Appendix B (Section B.1.5).
C-71-04	These leukemia deaths are particularly significant because leukemia is most easily induced by radiation. Leukemia is thought to be the cancer most easily detectable after radiation exposure because leukemias are relatively uncommon in a community and because the first cases occur within two years and peak after about seven years of exposure. Thus, the excess in leukemia deaths occurring in SRP workers is a strong indication of a health hazard to the community caused by the tritium radiation. This serious indicator was not studied in the environmental impact statement.	The cited report did not associate the leukemia mortalities with radiation exposure. There are other leukemogenic hazards, including exposures to several organic chemicals. Dr. Cragle is conducting followup studies, but results are not expected to be available before the end of 1991.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-71-05	Finally, in addition to the health hazards from a nuclear accident and chronic low level radioactive tritium exposure, I ask the agency to consider the health hazards resulting from the non-radioactive chemical wastes produced by the plant. From the Love Canal experience and information gleaned from other industrial waste sites, we know that toxic waste that is not radioactive, can cause illnesses, miscarriages, and birth defects. The environmental impact statement does not include an analysis of pregnancy outcomes, birth defects, and unusual incidence of illness in citizens living in the SRP area.	As noted in Section 5.2.2 of this EIS, DOE manages its hazardous chemical wastes in accordance with applicable Federal and state regulations. Also, please see the response to Comment C-15-04 on epidemiological studies.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-72	STATEMENT OF JAMES BOURNE P.O. BOX 2262 GEORGETOWN, SC 29442	
C-72-01	I have taken a day off from work to come 125 miles to speak out against a govt. policy I neither condone nor take lightly. What we all are concerned with here today can be summed up in any one of an infinite array of words and sentences. To be sure, we really need put forth but a single word. The word that is secretly acknowledge all but seldom heard of anyone the word? POISON. When I see or hear or hear the word TRITIUM, that "Secret" word springs to mind above all others: POISON A few weeks ago I received in the mail the draft Environmental Impact Statement from the U.S. Dept. of Energy. This proved to be quite a formidable document and most certainly did not encourage me to sit down with it for a long night of facinating perusal of it contents. I did, however, skim some of its more salient sections. I was looking for something. I found many sentences passages, some rather impenetrable analysis of technical data and problems, many esoteric buzz words but that which I was looking for I did not find. I did however, find it in many disguises, plutonium-238, gamma - emitting radionuclides, strontuim - 90, cesium - 137, and, of course, tritium, all of these radioactive monstrosities share one egregious commonality: They are all POISON. But not your ordinary, run-of-the-mill, garden varity of poison. These are special poisons. They last a very long time once loosed upon the air we breathe, the water we drink and the food we eat. Our govt is using your and my hard-earned money to manufacture unimaginably deadly poisons for the expressed purpose of arming nuclear warheads with which to exterminate vast and complex life forms. I'm sorry I cannot agree with such a policy and I view my presence before this body today as the strongest protest I can voice against such a policy. I say NO to tritium, NO to strontium-90; NO to cesium 137 I say NO to POISON! Thank you.	Comments noted.

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-73	COMMENTS OF DANIEL L. SOBELL EARTH FIRST 701 KINGSBRIDGE ROAD COLUMBIA, SC 29210	
	Sirs:	
C-73-01	I am writing to plead with your agency to halt the proposed restart of Savannah River Plant. I have lived in SC for the past 11 years and have only recently become aware of the danger SRP poses not only to the South Eastern United States but also to the global ecosystem. According to released documents, There are 168 waste sites on the ground of SRP that would require apporoximately \$10 billion to clean up. Within these sites some toxic waste stored in underground containers have been found to be leaking. It would only seem logical to rectify the above mentioned item before any company would begin to produce any more waste. This waste is a product of the facility producing plutonium and tritanium?	Please see the response to Comment C-05-03 on waste management and environmental restoration.
C-73-02	Plutonium and Tritanium are produced at SRP for the primary construction of Nuclear warheads and trigger mechanisms. In this age of Disarmament it again appears illogical that any company or govt would continue to produce these items when we have the ability to maintain our arsenal well into the next century. With a 10-15 year cushion it would be sensitive to all voters, politicians, and beauracrats to use the time period to not only cleanup our mess but continue to work on safe methods to produce, use, and dispose of nuclear products. If you, the D.O.E. were able to provide us, the residents of the United States, with a reasonable guarantee of safety we would probably be more willing to accommodate the Facility. History has shown that your agency was and still is not able to safeguard. The water around Savannah and other towns have been discovered to hold unsafe levels of radiation. Your argument for the economic survival of the town(s) supporting SRP is invalid also.	Please see the response to Comment C-01-01 on the need for tritium and other nuclear materials.
C-73-03		Please see the response to Comment C-01-02 on safety.
C-73-04		DOE is not aware of any unsafe levels of radiation in local or regional drinking water supplies. DOE regularly monitors the levels of radioactivity in the drinking water of Savannah and other cities and towns; as reported on the Annual Environmental Reports, they are well below EPA drinking-water standards.
	It is true that the community surrounding SRP is dependent upon the facility. So were the towns and cities the supported World War II. Many private factories were converted to defense oriented production during the war. When the war ended these factories were	

Table C-7. Public Comments and DOE Responses

Comment Number	Comment	Response
C-73-05	returned to production for the commercial and private sectors. Sirs, the Cold War is over! We <u>do not</u> need to continue production as it were still going on. If necessary you, the federal govt. can step in and assist the communities in becoming self supportive w/out SRP. I am in favor of a larger deficit rather than a large number of dying people and animals as a result of other species. We must coexist with our neighbor in the ecosystem we call planet Earth in order to survive. <u>Please</u> for the sake of all humans, living and yet to be born as well as all other forms of life, <u>Don't</u> restart SRP. Find a way to control the damage already caused and methods to completely insure that more damage and waste is not created. After all its our world. We have to live (or die) in it. Respectfully, Daniel L. Sobell 701 Kingsbridge Road Columbia, SC 29210	Please see the response to Comment C-01-01 on the need for tritium and other nuclear materials.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-01	STATEMENT OF HONORABLE H. O. WEEKS MAYOR, CITY OF AIKEN "K", "L" and "P" Reactors Startup	
A-01-01	I had the privilege of attending the first announcement of the Savannah River Plant which was November 28, 1950. Since that time I have continued my support of the improvements and operations at the plant. I have supported the NPR location at SRS and now I support the restart of the "K", "L", and "P" Reactors since we feel that sufficient studies have been made in the past and that the reactor can be restarted with no adverse impact on the environment. Our City Council has gone on record several times in support of the New Production Reactor and the restart of the Reactors. Our Council adopted a resolution urging Congress to proceed with the funding of the NPR at the earliest possible time and the restart of the Reactors. With the outstanding safety record that has been established over the years in operating the Reactors presently on the plant site, the excellent supervision that has been provided by DOE and the commitment of Westinghouse to continue to operate in a safe environment, we strongly urge DOE and Congress to proceed as rapidly as possible with the start-ups. We do not feel that it will be a detriment to the environment. With so many safeguards that have been built into the reactor for reactor safety we feel confident that it will not have a negative impact upon the environment. Our Council is unanimous in support of the NPR and the start up of the Reactors and so are the overwhelming majority of our citizens. As Mayor I have the privilege of having daily contact with hundreds of our citizens and <u>NONE</u> have expressed any desire to see the project <u>not</u> go forth as rapidly as possible. We have faith in our friends who live, work and play among us who would be operating these Reactors and who have done an excellent job these past 39 years. DOE and all its predecessors have monitored these conditions with utmost diligence and integrity. We appreciate that. For the defense of our country I say let's get on with the restart of the Reactors at SRS.	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-02	STATEMENT OF TIMOTHY SIMMONS	
A-02-01	MR. SIMMONS: My name is Timothy Simmons. I am the Chairman of the Board of the Greater Aiken Chamber of Commerce. I represent business in the Aiken community. Aside from the obvious positive economic benefits that the Savannah River Site provides the Aiken community, the Savannah River Site has ensured the safety of our free enterprise system over the past 40 years, maintaining the strong nuclear deterrent that's kept our adversaries at bay and has ensured the freedom of this nation and the free enterprise system that is the basis of this nation. The Greater Aiken Chamber of Commerce, on that basis, strongly supports the Savannah River Site, its mission, and recommends and supports the startup of the three reactors. From a personal standpoint, I personally know many of the fine, top quality people who work at the Savannah River Site, the scientists, the engineers. These people live in the Aiken area, 80 percent of them retire in the Aiken area and stay here to live. They are insiders, they are educated concerning the operation of the Savannah River Site. They know what goes on out there. If there were any problems with the operation of the Savannah River Site from a safety or environmental standpoint, they certainly would not want to remain in the Aiken area. These people are top quality people. I have full faith that they are doing everything that is necessary to ensure that the Aiken community is not placed in any undue risk. I have the same faith in those individuals, if not more so, as I have in the pilot of an airplane when I step onboard to take a flight. And I feel that I am certainly at a lot less risk living near the Savannah River Site than I would be in flying in an airplane. And the goal of the Savannah River Site, as mentioned, is certainly much more important to this nation than individuals getting on an airplane and flying. I myself, personally, support the Savannah River Site, its mission, and hopefully, the reactors will get started in the near future, and hopefully, we can get on with maintaining the defense of this nation. It would be foolish to advocate unilateral disarmament at this point. Freedom is breaking out all over, the old guard is dying off, and new people are coming up with new ideas in Eastern Europe and the rest of this world. But at this point, it is too soon to eliminate the strong nuclear deterrent that we had that has brought about the changes in the world. Thank you very much.	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-03	STATEMENT OF THE HONORABLE IRENE RUDNICK	
A-03-01	REP. RUDNICK: Mr. Cumbee, Mr. Patterson, I speak in favor of the restart of the reactors at the Savannah River Site. The United States must maintain a nuclear deterrent. Certainly, all of us are grateful for the easing of tensions between the United States and the USSR, and the beginning of democracy in Eastern Europe. But, no one knows what the Soviet Union will be like if Gorbachev stays or how long he will be President of the Soviet Union. Furthermore, countries under the control of butchers and madmen such as Iran, Iraq, Syria and Libya, will soon have, if they don't already, nuclear devices. The United States cannot afford to be at anyone else's mercy. For a nation to be unprepared is the way to Pearl Harbor. And to plead for mercy is the way to Auschwitz. The way to peace with other nations is to be fair and to be respectful in the dealings with other nations, and for other nations to know that the United States deals from a present of strength. The Savannah River Site will give us that strength. The Savannah River Site is operated by professionals, whose top concern is the health and safety of the people working at the Site, and the health and safety of the people living around the Site. No scientific study has ever revealed that the Site poses any health, safety or environmental hazards to anyone living around the Site. Certainly, there have been problems, which there will be when there are 16,000 people employed. But it should be pointed out that these problems have been promptly addressed. I and the tens of thousands of other people living near the Savannah River Site have no qualms about the operation of the plant. The nuclear genie will never get back in the bottle, and that is a fact that we must all realize. Thank you.	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
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A-04

STATEMENT OF RALPH CULLINAN
LOWER SAVANNAH COUNCIL OF GOVERNMENTS

A-04-01

MR. CULLINAN: My name is Ralph Cullinan. I am a legislative representative for the County Counsel. Senator Thurmond regrets that he was unable to attend this hearing because of a previous commitment, but he asked me to read his statement. Before that, I would also like to read a statement that I have been authorized to do for the Lower Savannah Council of Governments.

Comments noted.

First is the statement from the Lower Savannah Council of Governments. Whereas, the Board of Directors of Lower Savannah Council of Governments is concerned for the environmental and economic well-being of the six-county region, and whereas the United States Department of Energy has prepared a draft Environmental Impact Statement concerning the continued operation of K-, L-, and P-reactors, and whereas, said statement indicates the potential environmental risk of operating the three reactors are within acceptable limits, therefore, be it resolved by the Board of Directors of the Lower Savannah Council of Governments that the continued operation of the K-, L-, and P-reactors is hereby endorsed. Be it further resolved that the United States Department of Energy and the Westinghouse Savannah River Company be encouraged to continue to inform local officials of any adverse environmental impacts resulting from the continued operation of the K-, L-, and P-reactors. Adopted this day, the sixth of June, 1990. Signed by the Director Matt Thompson, and Matt Rice, Chairmen of Lower Savannah Council of Governments.

[Mr. Cullinan submitted a resolution, sealed and signed by the Savannah Council of Governments. DOE has placed copies of the resolution in the Public Reading Rooms.]

I will next read Senator Thurmond's statement....[Senator Thurmond's statement (A-92) is presented separately.]

[Mr. Cullinan also submitted the following statement.]

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
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STATEMENT ON SRS REACTOR RESTART

As a former employee of the duPont Company, I worked at U.S. nuclear plants in Oak Ridge, Tennessee, Hanford, Washington and also SRS. At no time during this 25 year period did I witness anything but total concern on the part of management for the safety of employees and the general public. Proof of such dedication is seen in SRS record of 38 years without a fatality due to radiation. Further demonstration is the consistently low exposure levels recorded annually and also the world-class safety records of SRS employees.

Regarding protection of the environment, I've never heard of another industrial plant where this factor received more attention! From the establishment of ecological base-levels before construction in 1952 to the present highly regarded Environmental Park, all effects of radiation on nature have been carefully monitored. The idea that some environmental disaster will follow a reactor start-up is utter fantasy; particularly after years of operation with up to 5 reactors on line.

The Department of Energy is certainly correct in holding these hearings and carefully evaluating all comments. I'm confident that when all is done, the decision will be to start the reactors in order to continue the peace through strength that we've all enjoyed.

In urging you to restart the reactors, I quote an Arab saying, "The dogs bark and the caravan moves on."

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response

RESOLUTION

ENDORISING CONTINUOUS OPERATION OF K, L, AND P REACTORS

WHEREAS, the Board of Directors of the Lower Savannah Council of Governments is concerned for the environmental and economic well being of the six county region, and

WHEREAS, the United States Department of Energy has prepared a draft Environmental Impact Statement concerning the continued operation of K, L, and P Reactors; and

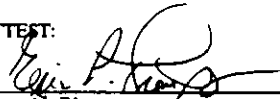
WHEREAS, said draft statement indicates the potential environmental risk of operating the three reactors are within acceptable limits;

NOW THEREFORE, BE IT RESOLVED by the Board of Directors of the Lower Savannah Council of Governments that the continued operation of the K, L, and P Reactors is hereby endorsed.

BE IT FURTHER RESOLVED that the United States Department of Energy and the Westinghouse - Savannah River Company be encouraged to continue to inform local officials of any adverse environmental impacts resulting from the continued operations of the K, L, and P Reactors.

ADOPTED THIS THE 6 DAY OF June 1990

ATTEST:


Executive Director
Lower Savannah Council of Governments


Chairman
Lower Savannah Council of Governments



SEAL OF LOWER SAVANNAH
COUNCIL OF GOVERNMENTS

C-787

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-05	STATEMENT OF THE HONORABLE FRED CAVANAUGH	
	DOE Hearing on the EIS to Re-start Reactors	
A-05-01	Mr. Chairman, Committee Members and Ladies and Gentlemen, My name is Fred Cavanaugh and I'm here to speak not only as a resident of the City of Aiken, but as a husband and the father of two young boys, a city councilman and Mayor Pro Tem of the Aiken City Council, and as an employee of the Westinghouse Savannah River Co. Our family moved to Aiken in April 1953. We thought Aiken was a wonderful place to live then and now in 1990 we think it's an even better place to live and raise our family. My family is the most important thing to me on this earth. Believe me if I felt this area was environmentally unsafe or for any other reason I wouldn't be sitting here now. To me one of the greatest testimonies that indicates the confidence in the Westinghouse Savannah River Co. and the safety at SRS is the fact that Aiken continues to grow, large numbers of retirees remain in Aiken and people continue to come to SRS to work. As Mayor Pro Tem I'm privileged to represent over 18,000 residents of Aiken. While I don't propose to speak for each one of them I can say that I have never had one person tell me that they oppose the SRS and or reactor restart. On the other hand I've had many residents express their support to SRS. Without question the vast majority of Aiken residents, including me, support the Savannah River Site and the reactor restarts as soon as the Dept. of Energy and the Westinghouse Savannah River Co. concur on the startup date. Mr. Chairman, I have neither heard nor seen any technically defensible reasons why these reactors should not be re-started. This site has been in operation now for almost 40 years and there has been no proven, factual negative effect on the environmental health of either the employees or the public in surrounding towns. While some people will try scare tactics, and comparisons with non-similar reactors, the same people are also willing to risk the disarmament of our country, I'm glad to see that our President, his administration, the Dept. of Energy and those that speak in support	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	of re-start are not willing for our country to be open to this risk. The facts are clear, the U.S. nuclear defensive strength has been one of the most important factors for peace in the last fifteen (15) years. Our country, thank God, is still the leader of the free world and must continue to be for many reasons. But, to be the leader we must continue to have a strong nuclear deterrent - a deterrent we hope and pray will never be used.	
	I'd like to take a moment and address the area of safety. From an <u>industrial</u> safety standpoint, facts distributed in Oct. 1988 stated that an employee at SRS was approximately 20 times <u>less</u> likely to suffer personal injury than one would be at a typical commercial nuclear reactor power plant. Also, that one at SRS was approximately 3 times safer than at another typical DOE site.	
	Concerning <u>nuclear</u> safety the records indicate that during the entire 38+ years of service at SRS there has never been an incident that put our surrounding communities at risk. And there has never been an injury or death related to a nuclear incident.	
	This is a marvelous safety record. And if it's compared to others such as 50,000 traffic deaths a year, or an estimate of 5,000,000 children who smoke and are now living in our country who will die from smoke related disease this safety performance becomes even more important and significant.	
	Yes, the facts prove that you and I are more likely to be injured in our cars going to and from the SRS than we are at work there. Likewise, the facts show that one receives more radiation exposure from natural causes each year, by a vast amount, than they would by working at or near SRS. Page 3-50 of the EIS Report shows on average we would get approximately 361.1 MREM from natural and medical causes compared to 0.1 MREM from SRS.	
	Mr. Chairman and Secretary Watkins, this community has worked harmoniously with the SRS for almost 40 years, and SRS employees have been important citizens to this community; it has been a very good relationship, and we look forward to it continuing with no ill effects.	
A-05-02	I ask you to study the facts, and make your decisions based on the facts, and not the rhetoric and innuendos that you'll hear. Our	The EIS provides the necessary information to ensure that environmental amenities and values receive

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	nation needs these reactors up and running, our community supports it. Our country <u>must</u> continue to maintain a strong nuclear deterrent. Thank you for the opportunity to express my thoughts.	appropriate consideration in the decisionmaking, along with economic and technical considerations. The Final EIS incorporates and addresses public comments on the Draft EIS.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-06	STATEMENT OF DAVID ALBRIGHT I am David Albright, Senior Staff Scientist at the Federation of American Scientists. The Federation, founded in 1945, is the oldest organization in the world devoted to ending the nuclear arms race. It is currently composed of about 4,000 natural and social scientists and engineers interested in the problems of science and society. I appreciate the opportunity to address this hearing on the draft environmental impact statement (DEIS) on the restart of the Savannah River reactors. <u>SUMMARY</u> The draft environmental impact statement on the Savannah River reactors is seriously flawed in its assessment of future requirements for tritium and alternatives to the continued operation of the aged Savannah River reactors. Three of the major flaws are:	
A-06-01	The DEIS bases its assessment of future tritium requirements on an obsolete Nuclear Weapons Stockpile Memorandum. At the very least, the DEIS should be redone reflecting reduced U.S./Soviet tensions, the START treaty, and political changes in Europe that have already led to cancellations of tactical nuclear weapons.	The Department of Energy produces tritium (and other nuclear materials) as directed by the Nuclear Weapons Stockpile Memorandum (NWSM), which determines the need for defense materials, and which is approved by the President. The most recent NWSM, approved by President Bush on July 12, 1990, was used in calculating the demand for new production of tritium in Appendix A. In addition, Appendix A considers a potential reduced-need scenario for tritium. Because detailed information on defense need involves national security information, nuclear material requirements and the production capabilities required to meet these demands are discussed in a classified appendix (Appendix A) of the EIS. This classified appendix was not distributed with the main document, but will be considered by DOE decisionmakers; it is available to those meeting security requirements. Unclassified information from Appendix A is included in Section 1.2 of the EIS.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-06-02	The DEIS unduly dismisses the alternative of not restarting these reactors. The DEIS does not consider several non-reactor alternatives for obtaining tritium that could eliminate the need to restart the Savannah River reactors.	Section 2.4 of the Draft and Final EIS discusses other production options; however, these options do not meet the need as discussed in Section 1.2.
A-06-03	The DEIS assumes that the Savannah River reactors might be needed to produce weapon-grade plutonium. However, there is absolutely no need to produce additional amounts of plutonium for nuclear weapons. This is an ideal time to permanently halt plutonium production through agreement with the Soviet Union. <u>1. THE DEIS USES AN OBSOLETE DOCUMENT TO ESTABLISH FUTURE TRITIUM REQUIREMENTS</u>	Section 1.2 of the EIS states that, "(a)lthough not currently anticipated, a need for the production of weapons-grade plutonium in SRS reactors could develop in the future."
A-06-04	The basis for the analysis of future tritium requirements in this DEIS is the Nuclear Weapons Stockpile Memorandum (NWSM) approved by President Reagan on January 19, 1989 [see DEIS, p. 1-3].¹ This memorandum predates the historic events in Europe that are leading to sizeable budget cuts in U.S. defense programs and continued reductions in the size of the U.S. nuclear arsenal. Although these momentous changes are acknowledged as potentially significant in the DEIS, they are treated as essentially irrelevant to the Department of Energy's plans to restart the Savannah River reactors: ¹According to recent Congressional testimony, the government has been unable to finalize a new Nuclear Weapons Stockpile Memorandum (NWSM) "due most significantly to DOE's continuing difficulties in being able to maintain the production complex in a fully operating form" [Testimony of Robert Barker, Assistant to the Secretary of Defense (Atomic Energy), DOD, Hearing before the Subcommittee on Energy and Water Development on the Energy and Water Development Appropriations for 1991, Hearing U.S. House of Representatives, March 12, 1990, Part 6, p.531]. The Nuclear Weapons Council, which is composed of representatives of both the DOE and the DOD, recently approved a delay in submitting the NWSM to the President from October until early next year [Ibid., p. 620].	Please see the response to Comment A-06-01 on need.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	"The potential exists that material requirements could decrease in the future due to the changing world geopolitical situation (e.g. potential Strategic Arms Reduction Talks [sic] Treaties; potential reduction of U.S. tactical presence in the North Atlantic Treaty Organization) and budget constraints. A qualitative analysis indicated that although the potential for significant reductions to material requirements exists, it is not likely that the requirements for the near term will change significantly. This is due to the long lead time, following enactment of a treaty, before recycled materials from retired weapons would become available. Thus, although material requirements might change in the future, the current NWSM remains the basis for the analysis in this EIS." [DEIS p. 1-3]. The DEIS simply ignores several important developments: • The agreement by the United States and the Soviet Union to complete a START treaty by the end of this year. Since the tritium in nuclear weapons is contained in removable reservoirs, the tritium in the warheads scheduled to be retired under the START treaty could be obtained much earlier than the date the warheads are actually dismantled, or in fact even before the delivery vehicles are destroyed under the treaty. • The recent agreement between the United States and the Soviet Union to begin negotiating even deeper cuts in strategic nuclear forces after the START treaty is signed. • President Bush's announcement on May 3 to cancel two major tactical nuclear programs, the follow-on-to-Lance missile and a new 155-millimeter artillery shell. "As democracy comes to Eastern Europe and Soviet troops return home, there is less need for nuclear systems of the shortest range," the President said. These reduced tensions are also expected to lead the United States to withdraw a few thousand battlefield nuclear weapons in Europe. • Secretary of Defense Cheney's recent announcement to cut the number of B-2 "stealth" bombers from 132 to 75, which will result in a reduced need for strategic bombs and air-to-surface missiles.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	- Increasing calls in Congress for the Bush Administration to cut major nuclear weapons programs in order to achieve significant reductions in the overall defense budget. - The Rocky Flats Plant near Denver, which is the only production-scale plant in the complex capable of making plutonium triggers for weapons, has been closed since late last year. As a result, warhead production schedules are slipping, which will mean that tritium requirements will also slip.	
	The DEIS's simplistic analysis of future tritium requirements could leave the unwary reader with the impression that the U.S. government is not preparing for the possibility that the Savannah River reactors do not restart on schedule. That such planning is occurring can be seen in the written response of John C. Tuck, Under Secretary and Acting Assistant Secretary for Defense Programs, Department of Energy, to questions submitted by Chairman Tom Bevill in the March 12, 1990 hearing before the Subcommittee on Energy and Water Development of the Committee on Appropriations. QUESTION: What contingency plans have been developed by the Department in the event of a tritium shortfall? ANSWER: If for some reason, the Savannah River reactors were not to restart, significant risks in meeting essential tritium demands for the stockpile would begin to be incurred... [deleted] The Department of Defense has developed, at the direction of the President, a set of stockpile contingencies in response to various tritium production levels.	
A-06-05	The DEIS should include an analysis of future tritium requirements that takes account of these recent developments. The Pentagon is clearly considering adjustments in its plans in case the Savannah River reactors do not restart as planned. The DEIS should at least incorporate similar contingencies as alternatives to restarting these reactors. <u>II. THE DEIS UNREASONABLY DISMISSES OR IGNORES NON-REACTOR ALTERNATIVES TO THE RESTART OF THE SAVANNAH RIVER REACTORS</u> STRETCHING CURRENT SUPPLIES OF TRITIUM	The proposed action includes a number of operational modes for the reactors from power operation to cold standby as the need for materials changes. Appendix A analyzes the nuclear material requirements of the 1990 NWSM and the options to supply such materials including resumption of production by SRS reactors. In addition, a potential reduced-need scenario was evaluated and is considered in this EIS.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-06-06	The Department of Energy and the Pentagon can take a number of steps to extend the current supply of tritium for several years without significantly affecting U.S. national security. These include: • Cannibalize enhanced radiation warheads, which use large amounts of tritium. The authors of the Nuclear Weapons Databook estimate that the United States has about 400 neutron warheads. These battlefield warheads, which are low-yield (about one-kiloton) thermonuclear weapons that use the neutrons released rather than the blast as the primary source of damage, have questionable military usefulness. Intended for deployment in Europe, they have remained in the United States because NATO allies oppose having these warheads deployed on their territories. According to government sources, each warhead contains roughly 15 grams of tritium, for a total of about 6 kilograms of tritium in all 400 warheads when they are fully loaded. This is the equivalent to roughly a one-year supply. • Eliminate the yield options in some nuclear weapons. One way to vary a warhead's yield is to control the amount of tritium used in the explosion. Several tritium bottles or "reservoirs" are placed in a warhead, and the yield is controlled by the number of reservoirs emptied into the core during the firing sequence. Eliminating yield options in a fraction of weapons would allow a significant amount of tritium to be recovered from the extra reservoirs for use in other weapons. • Accelerate retirement of older warheads, such as those on Poseidon missiles, tactical gravity bombs, and battlefield nuclear weapons. Early retirement of the nuclear artillery shells and short-range nuclear missiles in Europe could result in a tritium savings equivalent to about a one-year supply. • Stretch or thin out deployment of new warheads and bombs on nonessential or unreliable weapons systems, such as the nuclear tipped sea-launched cruise missile and the B-1B penetrating bomber. Such a step might take place in any case because of the continuing problems at the Rocky Flats Plant. • Continue to minimize the size of the tritium processing pipeline. Although this option has been extensively pursued by the Department of Energy, further savings should be sought.	The analysis provided in Appendix A includes an evaluation of measures to extend the usefulness of the existing tritium inventory; however, the actions suggested are beyond the scope of this EIS and will not permit DOE to satisfy the requirements imposed by the current NWSM.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	• Keep reservoirs in warheads longer than is now the custom. Whether this could result in more than a minor degradation in yield depends on warhead design and the range of yields maintained. • Put less tritium in new reservoirs but replenish the supply more often. For example, one of the reasons for a large tritium production requirement is longer warhead replenishment cycles in newer warheads. According to administration sources cited in the <i>New York Times</i>, the new generation of submarine launched weapons have maintenance cycles of ten years or longer compared to a 4 to 6 year cycle for most of the currently stockpiled weapons. Such a shift requires a greater amount of tritium in newer warheads than in the ones being replaced, and hence a larger total tritium inventory. Shortening the cycles would thus reduce the tritium requirement. However, this step could be counterproductive if its primary result were more tritium circulating in the replenishment "pipeline." A few of the options discussed above involve borrowing against future production of tritium. However, deferring tritium production requirements to future years, when anticipated reductions in strategic nuclear forces, is an attractive strategy for dealing with near-term shortages. ARMS REDUCTION AGREEMENTS	
A-06-07	The most significant factor affecting the need for new tritium is the potential for deep reductions in the nuclear arsenals of the United States and the Soviet Union. If the total number of U.S. weapons decreases faster than the rate that tritium decays, in principle the tritium needed to replenish the remaining weapons could be obtained from the dismantled weapons.	DOE has revised Section 1.2 of the EIS to clarify that the NWSM, which is issued annually, considers changes in the world geopolitical situation.
A-06-08	START Treaty: The United States and the Soviet Union have agreed to complete work on the START treaty this year. This treaty would provide the United States with a significant tritium savings. If under such an agreement the United States retires only 2,000 nuclear warheads and bombs, each containing a nominal 4 grams of	Recycling is being performed. Section 1.2 discusses recycling facilities and the recycling of materials from retired weapons. The supply of materials from recycling is considered in Appendix A in analyzing the need for continued operation of the reactors. Also, please see the response to Comment A-06-01 on the need for tritium and other nuclear materials.

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response

tritium, the United States would obtain enough tritium from retired weapons to replenish the remaining warheads for about two years.²

START II Treaty: Following the signing of the START treaty, the United States and the Soviet Union agreed at the recent Bush/Gorbachev summit in Washington, D.C. to begin negotiations at the earliest practical date for even deeper cuts in their strategic nuclear arsenals. As part of an effort to reduce incentives for a nuclear first strike, the two sides agreed to "seek measures that reduced the concentration of warheads on strategic delivery vehicles as a whole, including measures related to the question of heavy missiles and MIRVed ICBMs."³

Although neither side has publicly stated the level of reductions that might be achieved under a START II treaty, I have calculated tritium requirements under two credible scenarios that would leave the United States with a total nuclear arsenal of 10,000 and 5,000 nuclear warheads (see Table). If this treaty is ratified in 1995 and the arsenal is shrunk to 10,000 weapons, tritium production would not need to resume for about 10 years after this ratification date, or until about the year 2005. If the arsenal is reduced to 5,000 weapons, tritium production would not need to be resumed until after 2015.

Deeper Cuts: If the United States and the Soviet Union implement a nuclear weapons reductions agreement that would leave each side with only 2,000 nuclear weapons by the end of this

²The total U.S. nuclear arsenal is estimated by authors of the Nuclear Weapons Databook at about 21,000 warheads. Of these, about 12,700 warheads are currently in the strategic arsenal and the rest are in the tactical stockpile. A reduction of 2,000 warheads is therefore about a 15 percent cut in the strategic arsenal. An arsenal of 19,000 warheads would require about 76,000 grams of tritium, assuming each warhead contains about 4 grams of tritium. Since tritium decays at the rate of about 5 percent a year, each year about 4 kilograms of tritium would be needed to replenish this many weapons.

³The White House, Office of the Press Secretary, "Joint Statement on Future Negotiation on Nuclear and Space Arms and Further Enhancing Strategic Stability," June 1, 1990.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-06-09	century, then the United States would not have to produce any more tritium until after the year 2030. <u>III. PERMANENTLY HALTING PLUTONIUM PRODUCTION FOR WEAPONS</u> <u>PLUTONIUM PRODUCTION CAPABILITY IS UNNECESSARY</u> The DEIS states that a need for the production of weapon-grade plutonium in the Savannah River reactors could develop in the future [DEIS, p. 1-4]. However, there is no need to produce more plutonium for nuclear weapons. The United States can maintain a nuclear arsenal of roughly the present size and composition for many decades, by using presently available alternatives that could eliminate the need to maintain a capability to produce weapon-grade plutonium in the Savannah River reactors. These alternatives primarily involve techniques and procedures to manage more effectively the existing inventory of plutonium. They include: • Continuing to develop more realistic projections of the number of nuclear weapons that are necessary to build; • More closely matching the retirement of obsolete weapons with the deployment of new weapons; • More efficiently processing plutonium in the warhead fabrication and dismantlement system. The START treaty will result in a large plutonium surplus, even if the START agreement leads to a reduction in the U.S. nuclear arsenal of only about 2,000 weapons. Assuming 3-4 kilograms of plutonium per warhead, this many warheads would contain about 6,000 to 8,000 kilograms of plutonium. These options are considerably cheaper than producing additional plutonium or rebuilding production capabilities. Permanently halting plutonium production would also eliminate the need to operate several old plutonium extraction facilities at the Hanford Reservation and Savannah River Plant that are increasingly expensive to maintain and operate.	Please see the response to Comment A-06-03 on weapons-grade plutonium.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
ACHIEVING A U.S.-SOVIET BILATERAL HALT TO PLUTONIUM PRODUCTION		
A-06-10	On April 7, 1989 General Secretary Gorbachev announced that the Soviet Union had "decided to cease this year the production of enriched weapon-grade uranium" for weapons and would shut down additional plutonium production reactors over the next few years in "yet another major step towards the complete cessation of the production of fissionable materials for use in weapons." Gorbachev's announcement, combined with the temporary halt to U.S. plutonium production, creates a historic opportunity for American and Soviet leaders to close down their plutonium production facilities permanently through mutual agreement. Last year, the House of Representatives overwhelmingly passed legislation calling for the U.S. to negotiate a mutual halt to plutonium production for weapons. Achieving a bilateral halt to plutonium production would increase world security and complement U.S. and Soviet efforts to achieve significant reductions in their nuclear arsenals.	Please see the responses to Comments A-06-07 on the changing world geopolitical situation and A-06-03 on weapons-grade plutonium.
IV. CONCLUSION		
A-06-11	The DEIS has not adequately established the need to resume operations of these reactors. In fact, the Energy Department appears unable or unwilling to estimate accurately its future needs for tritium in this document. It continues to emphasize the need for large quantities of nuclear materials, and implicitly a large nuclear arsenal, at a time when Presidents Bush and Gorbachev are finding ways to end the nuclear arms race and reduce the number of nuclear weapons in the world. The DEIS should be redone and the restart of the Savannah River reactors postponed at least until a new DEIS is issued.	Please see the response to Comment A-06-01 on the need for tritium and other nuclear materials.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
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ESTIMATED DATE WHEN TRITIUM PRODUCTION WOULD NEED TO
RESUME UNDER A START II TREATY RATIFIED IN 1995

<u>Final Size of Nuclear Arsenal</u>	<u>Year Tritium Production Resumes</u> ⁴
Scenario 1: 10,000 warheads	2006 (11 years)
Scenario 2: 5,000 warheads	2018 (23 years)

⁴I ignore the impact of the tritium pipeline in this illustrative estimate. I assume that the current tritium inventory is about 100,000 grams of tritium. Under these assumptions, the tritium inventory would be about 75,000 kilograms in 1995, or enough tritium to support a nuclear arsenal of almost 19,000 nuclear warheads, assuming an average of about 4 grams of tritium in each warhead.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-7	STATEMENT OF THOMAS B. COCHRAN, PH.D.	
	TESTIMONY TO THE DEPARTMENT OF ENERGY CONCERNING THE DRAFT ENVIRONMENTAL IMPACT STATEMENT ON THE CONTINUED OPERATION OF THE K, L AND P REACTORS AT THE SAVANNAH RIVER SITE June 8, 1990 Aiken, South Carolina	
	My name is Thomas B. Cochran. I am a Senior Staff Scientist with the Natural Resources Defense Council (NRDC). I hold a Ph.D in Physics from Vanderbilt University and was a member of the Department of Energy's (DOE) Energy Research Advisory Board (ERAB) from 1978-1982; DOE's Nuclear Proliferation Advisory Panel (1977-79); and the Nuclear Regulatory Commission's Advisory Panel for the Decontamination of the Three Mile Island Unit 2 (1980-1986). I am also an editor and co-author of the <u>Nuclear Weapons Databook</u> series, Volume I, "U.S. Nuclear Forces and Capabilities," Volume II, "U.S. Nuclear Warhead Production," Volume III, "U.S. Nuclear Warhead Facility Profiles," and Volume IV, "Soviet Nuclear Weapons," published by the Ballinger Publishing Company.	
	The Natural Resources Defense Council is a national non-profit environmental organization representing over 160,000 members and contributors. NRDC has been working for the past 17 years to ensure the safety of DOE's nuclear weapons production facilities and	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-07-01	prevent the proliferation of nuclear weapons. I am pleased to have this opportunity to present our views concerning the Draft Environmental Impact Statement on the proposed restart of the K, L and P reactors at the Savannah River Site. The issue at hand boils down to two choices: should we restart one or more obsolete SRP reactors and risk a serious nuclear accident in order to preserve a stockpile of nuclear weapons at Cold War levels? Or, recognizing the profound changes that have occurred in the world recently, should we instead choose to ensure the health and safety of the citizens of South Carolina and Georgia by placing the SRS reactors on cold standby and relying on the tritium supplies that will be recovered from the thousands of warheads that will be retired over the next several years? The Draft Environmental Impact Statement (DEIS) should have carefully laid out the pros and cons of these two options for public comment and government decision-making. Unfortunately, it did not. Instead the Department of Energy (DOE) has once again refused to discuss publicly the national security implications of reducing the nuclear weapons stockpile, and has instead churned out a DEIS that obfuscates the risks of continued Savannah River Site operations. THE APPROACH TO RESTART TAKEN IN THE DEIS DEFIES LOGIC The Savannah River reactors have been shut down for two years.¹ The issue we now face is whether they should be restarted. For reasons not at all apparent, the authors of the DEIS cannot bring themselves to use the word "restart." Instead, the DEIS proposes "to continue to operate K-, L-, and P-Reactors" (DEIS, p. S-1). Similarly, when discussing alternatives to restart, the DEIS states, "This section describes the actions DOE would take to terminate operation of one or two of the SRP reactors in the immediate future (i.e., before resuming production)..." (DEIS, p. 2-63). This approach is the height of illogic. How can DOE "continue to operate" reactors that are not operating? What does it mean to "terminate operation of" reactors that have been shut down for two years? More fundamentally, should we trust a government agency that plays such games, or should we assume it has something to hide?	National security implications are not the scope of this EIS; Section 4.1.3 discusses risks associated with SRS reactor operation. Also, please see the response to Comment A-06-01 on classified material.
A-07-02	The Savannah River reactors have been shut down for two years.¹ The issue we now face is whether they should be restarted. For reasons not at all apparent, the authors of the DEIS cannot bring themselves to use the word "restart." Instead, the DEIS proposes "to continue to operate K-, L-, and P-Reactors" (DEIS, p. S-1). Similarly, when discussing alternatives to restart, the DEIS states, "This section describes the actions DOE would take to terminate operation of one or two of the SRP reactors in the immediate future (i.e., before resuming production)..." (DEIS, p. 2-63). This approach is the height of illogic. How can DOE "continue to operate" reactors that are not operating? What does it mean to "terminate operation of" reactors that have been shut down for two years? More fundamentally, should we trust a government agency that plays such games, or should we assume it has something to hide?	DOE considers the reactors to be in operation during the current modification period, just as NRC considers commercial nuclear powerplants that are in extended outages for major modifications to be in operation and remain under their operating licenses in a cold shutdown mode. Section 2.1 and the Summary define "continued operation."
¹The K-reactor was shut down on 10 April 1988; the L-reactor shut down on 23 June 1988; the P-reactor shut down on 17 August 1988.		

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	THE DEIS WAS PREPARED BY THE SAME CONSULTING FIRM THAT PREPARED THE NOW-DISCREDITED 1984 L-REACTOR EIS	
A-07-03	The DEIS is clearly not the careful work of men and women at DOE dedicated to the protection of public health and safety. Pages LP-1 to LP-13 of the DEIS indicate that the DEIS was prepared by no less than 32 employees of the NUS Corporation, and only three from the DOE (two of the DOE employees prepared the classified Appendix A, and the third prepared the brief sections on Pu-238 requirements and production alternatives.) Four other DOE employees are listed as reviewers.	DOE accepts responsibility for its EISs, for providing its Technical Support Services Contractor with the necessary data input and documentation, and for performing independent evaluations of the information and analyses in its EISs. The List of Preparers has been updated in the Final EIS.
A-07-04	NUS has long specialized in preparation of environmental impact statements for the commercial nuclear industry and DOE. Most pertinently, the NUS firm prepared the now-discredited 1984 EIS on the restart of the L-Reactor at SRP.² This is the EIS that said "no significant reactor accidents have occurred at the SRP in its 30 years of operation" (p. G-3) — a misrepresentation exposed by the release of a 1985 memorandum prepared by G.C. Ridgely of DOE, listing 31 accidents of "most significance." This is the EIS that asserted that "fuel melting has never occurred in the SRP reactors" (p. G-5) — a lie exposed by the same Ridgely memorandum that said a fuel assembly had "incurred melting" on 27 December 1970. This is the EIS that stated "[i]f there appears to be a significant question of reactor safety, the reactor is shut down until it can be demonstrated that operation will be within the envelope of acceptable conditions required by the reactor operation and Technical Standards, which are established by DOE and the operating contractor, respectively" (p. 4-45). Contrast this with the statement of Richard Starosteki, then Deputy Assistant Secretary of Energy for Safety, Health and Quality Assurance, who in a 1988 internal DOE memorandum called the attitude toward safety at SRP "a prelude to disaster, as they found at TMI, the Challenger, and Chernobyl."	DOE does not agree that the L-Reactor EIS is "now-discredited." Accidents and risks presented in that EIS fully bounded the "accidents of most significance" referred to in this comment.
	NUS' discredited 1984 EIS also told us that it was necessary to restart the L-Reactor as soon as practicable, which turned out to be untrue. The EIS said that L-Reactor operations would be safe — an	

²Final Environmental Impact Statement, L-Reactor Operation, Savannah River Plant, DOE/EIS-0108, May 1984.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-07-05	assurance which was refuted repeatedly: first by the Ridgely memorandum, then by external safety reviews by the National Academy of Sciences/National Academy of Engineering (NAS/NAE), and most recently by the two serious human performance failures at the SRS reactors in August 1988 and January 1989.	Page v of the Foreword addresses the events that resulted in the current outage. Section 4.1.3 discusses the "Ridgely memorandum." Concerns of the NAS/NAE are discussed in Section 2.1.3.1.
A-07-06	The DOE has brought scores of additional experts to the SRS to prepare reactors for restart, and is spending hundreds of millions of dollars in the process. What are we to believe when the DOE assigns only three of its own people to prepare, and four to review, what should be the most important document related to the restart decision? What should we think when the department turns responsibility for dealing with public concerns over to an outside contractor? The only conclusion can be that the Department does not take this EIS seriously. FAILURE TO ASSESS ADEQUATELY THE RISK OF CONTINUED OPERATION OF THE SRP REACTORS	Please refer to the response to Comment A-07-03 on DOE responsibility for its EISs.
A-07-07	DOE, under Secretary Watkins, is to be commended for its corrective action program which is designed to be responsive to criticisms of the SRS reactors and operating procedures by the NAS/NAE, the Advisory Committee on Nuclear Facility Safety (ACNFS) and internal DOE audits (see DEIS, pp. 2-47 to 2-62). It is clear, however, that because of the pressure to resume tritium production, the SRP reactors will not be brought up to the safety standards of commercial reactors licensed by the NRC and several of the upgrades underway will not be completed prior to the time DOE proposes to restart the reactors. The NAS/NAE concluded that "[t]he existing level of understanding of severe accident behavior for the production reactors is inadequate to permit a realistic assessment of the effectiveness of these designs in mitigating the consequences of severe accidents."³ This conclusion remains valid today. The NAS/NAE recommended that the Secretary of Energy "make a prompt and realistic assessment of the length of time the existing reactors are to operate," and if it is more than a few years the DOE "should	Sections 2.1.2.8.2 and 2.1.2.7 of the EIS address the concerns about reactor safety and the reactor modifications to be completed as safety enhancements both before and after resuming operations. As stated by Secretary Watkins on several occasions: "restart of any of the SR reactors will not be authorized until I am personally satisfied that they can be operated safely" (Memo, Secretary of Energy Watkins to Secretary of Defense Cheney, April 1989). In addition, Section 2.1.3.1.2 of the EIS states that DOE has a number of activities in progress to address aging. The results of these activities have not indicated any life-limiting mechanisms.
³National Academy of Sciences/ National Academy of Engineering, <u>Safety Issues at the Defense Production Reactors: A Report to the U.S. Department of Energy</u> (Natl. Academy Press) 1987, p.40.		

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	commit to a severe accident model development and validation."⁴ The Secretary of Energy has not presented a realistic assessment of the length of time DOE proposes to operate the reactors. And while DOE has committed to developing a Severe Accident Assessment Program (SAAP), very little in terms of results will be forthcoming before DOE's planned restart of the reactors. One of the recommendations of the NAS/NAE was that DOE complete Level 1 and Level 2 probabilistic risk assessments (PRAs) of the SRP reactors and subject them to peer review as expeditiously as possible.⁵ However, DOE is only committing to complete a Level 1 PRA before restart, and even here there is no commitment for peer review before restart. A Level 1 PRA involves general methods of analysis that are independent of the reactor design and are therefore less useful than Level 2 PRAs, whose methods of analysis are plant-design dependent.	
A-07-08		The Level-1 PRA has been completed and will be released to the public after the review for Unclassified Controlled Nuclear Information is completed. The Level-1 PRA has already undergone a peer review by groups of experts and will continue to undergo peer review for future revisions. Section 2.1.3.1 has been revised to discuss these groups.
A-07-09	The DEIS presents some accident probability assessment results (DEIS, pp. 4-74 to 4-96). However, the analysis is too crude to draw the conclusion that the reactors are safe. Furthermore, since most of the underlying assumptions are not presented, there is no way the public can place confidence in the results. All we can do is form a judgement about what DOE believes is safe enough. DOE claims the core damage frequency is 0.0002 per reactor-year.⁶ This implies that for the three SRP reactors operating over a ten year	The information on accident risks in the EIS and the referenced SID is consistent with the current state of the art for probabilistic risk assessments, and contains the best estimates available at the present time. The SID, and its underlying assumptions, underwent an independent review, to ensure that it provides adequate technical information to the decisionmaker.
	⁴ Id., p. 48.	
	⁵ Id., p. 40.	
	⁶ DEIS, p. 4-75.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-07-10	period the probability of a severe accident involving core damage is 0.6 percent during this period ($0.0002 \times 3 \times 10 = 0.006$). <u>In other words, over a decade of operation at SRS there is about a one-percent chance of an accident comparable to, or larger than, the accident at TMI.</u> Given, as the NAS/NAE concluded, that our knowledge of the severe accident behavior for the production reactors is inadequate to permit a realistic assessment of their effectiveness in mitigating the consequences of severe accidents, it simply is not worth the risk to restart these reactors in the near future and operate them for any extended period, <u>unless</u> the tritium to be produced is vital to our national security. As explained below, it is not. THE REACTORS CAN BE PLACED ON COLD STANDBY OVER THE NEXT SEVERAL YEARS WITHOUT AFFECTING NATIONAL SECURITY To prop up its argument for restarting the SRS reactors, DOE is relying on a Nuclear Weapons Stockpile Memorandum prepared by the Departments of Defense and Energy in 1988, and approved by President Reagan on January 19, 1989. This two year old analysis has been rendered obsolete by events in Europe, and by the Strategic Arms Reductions Talks (START). The tritium requirements were formulated before the Berlin Wall came down, before Nicolae Ceausescu was overthrown in Romania, before democracy in Poland, before Lithuania voted for independence, before Yeltsin was elected to head the Russian Republic, before the Soviets announced the unilateral withdrawal of 1500 nuclear weapons from Eastern Europe, before the Kazakh Republic voted to halt nuclear testing at the Semipalatinsk test site, and before the major impediments to a START treaty were resolved. The Soviets are shifting to a democratic, multiparty government, and a free market economy. They seek our friendship. The Cold War is over - a fact acknowledged by President Bush, nearly every world leader, the CIA, and almost everyone except a few Cold Warriors in the U.S and Soviet militaries.	DOE has based the information in this EIS on the latest NWSM, which President Bush approved on July 12, 1990. In addition, a potential reduced-need scenario was evaluated in the classified Appendix A, and an unclassified discussion of this scenario is presented in Section 1.2 of this EIS.
A-07-11	While DOE acknowledges that the world is changing, it argues that "although the potential for significant reductions to material requirements exists, it is not likely that the requirements for the near term will change significantly" (DEIS, p. 1-3). This statement can only mean that the DOE wants to create a tritium reserve or to	Please see the responses to Comments A-06-01 on the need for tritium and A-06-07 on changes in the world geopolitical situation. Discussions of specific weapons systems are not within the scope of this EIS.

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response

hold on to old warheads that no longer have a mission. If we could pry the relevant information out of the classified appendix to the DEIS, it would boil down to a simple question: Is DOE proposing to risk the lives of the citizens of South Carolina and Georgia by restarting these obsolete reactors in order to produce tritium that will never be needed?

Enough public information exists to allow an informed judgement about tritium needs. Currently, the U.S. nuclear weapons stockpile stands at about 20,750 weapons. Most of these - about 20,000 warheads - rely on tritium (see Table 1; the W33/8-inch artillery shells do not use tritium). The tritium recovered from retired warheads can be used to replenish the tritium in the active stockpile that is lost through radioactive decay. Thus, restart of the SRS reactors can be avoided if we can identify realistic reductions in the number of warheads that rely on tritium at a rate equivalent to the rate tritium decays - about 5.5 percent per year.

At this rate, we would have to reduce the size of the stockpile by 4000 warheads over the next four years, and by an additional 4600 warheads by the end of the decade [see Table 2]. The START treaty, which will almost surely be signed before the end of 1990, will reduce the U.S. strategic arsenal by 3000 warheads by 1998. The U.S. has just over 4000 nuclear warheads, nuclear artillery shells and bombs currently deployed in seven West European countries (see Table 3). These are for the purpose of deterring the Warsaw Pact, which no longer exists as an effective military force. Over twenty-five hundred of these nuclear weapons are based in Germany. They most assuredly will have to be removed. The U.S. Navy has over 1000 tactical nuclear weapons, including over 300 SLCMs and over 700 depth bombs. We retain these only because the U.S. refuses to engage in naval arms control talks with the Soviets.

During the next decade some of the existing warheads in the stockpile will be replaced with more modern designs. The W88/Trident II D5 Warhead, currently in production, is the only new warhead that is likely to require more tritium than the warhead it replaces (the W68/Poseidon C3 warhead). Even if the tritium requirements of the W88 were twice that of the W68, the impact of this added demand over the next decade could be offset by the retirement of about 200 additional warheads per year, or 2000 over a decade. In sum, we can defer tritium production for at least a

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-07-12	<u>period of six to ten years. While some may argue this time-frame is a few years more or less than estimated, the only decision that has to be made today is whether we can defer the restart decision and revisit it at a later date. Clearly we can.</u> So what is the prudent policy regarding the SRS reactors? We believe it is to complete the safety upgrades and place the facilities on cold standby. It is not worth the risk to restart these reactors when we can safely mine the nuclear weapons stockpile for tritium for years to come. THE DEIS IS SO INADEQUATE THAT IT MUST BE REISSUED FOR COMMENT The DEIS is so flawed that it does not permit adequate review and therefore must be reissued for public comment prior to preparation of a final EIS. The Federal regulations governing the preparation of EIS's state very clearly: "If a draft statement is so inadequate as to preclude meaningful analysis, the agency shall prepare and circulate a revised draft of the appropriate portion." 40 C.F.R. §1502.9. Moreover, the case law is clear that an inadequate EIS cannot be "cured" by the summary addition of information in the final EIS or a supplemental EIS. As one court held: There cannot be responsible decision-making when data appears in the final EIS without being subject to the critical evaluation that occurs in the draft state. ...The failure to include ... data in the draft impact statement denied the plaintiffs the "opportunity to test, assess, and evaluate the data and make an informed judgment as to the validity of the conclusions to be drawn therefrom."⁷ The DEIS fails to face up fully and fairly to the fundamental issues involving the SRS reactors. The DEIS simply does not adequately assess the need for, impacts of, and alternatives to the operation of the SRS reactors. As such, the DEIS violates NEPA and deprives the DOE, Congress and the public of a critical decision-making tool.	The EIS presents the evaluation results of an extremely complex, major Federal action at a level of detail consistent with the letter and intent of the National Environmental Policy Act (NEPA), and presents and evaluates information on a full range of alternatives in a manner that can be read and understood by a wide range of public and agency reviewers and DOE decisionmakers. Also, DOE considers the Draft EIS to be a thorough and accurate analysis of the environmental issues associated with continued operation of K-, L-, and P-Reactors in accordance with NEPA and CEQ regulations.

⁷Appalachian Mountain Club v. Brinegar, 394 F. Supp. 105, 121-122.

Table C-8. Public Comments and DOE Responses

Response

First Time

U.S. NUCLEAR WEAPONS STOCKPILE (JUNE 1990)

Warhead/Weapon	Yield (kilotons)	Weight (kilograms)	User	Number (approximate)	Status
Strategic					
B61-1	0.38	70-1,400	AF	100	Being replaced by B61-1 and B61-3 bombs.
B61-2	0.45	<1,000	AF, MC, N, NATO	330	Being replaced by new B61-3, B61-4, and B61 bombs.
B61-3	0.62	8,000	AF	50	Being replaced by B61-3 bombs.
B61-4	1.03	<1 to 20	AF, MC, N, NATO	75	To be replaced by B61-4 nuclear deep-penetration bombs.
B61-5	1.03	<1 to 20	N, NATO	625	Anticommunist weapon, to be replaced by B61-4 nuclear deep-penetration bombs.
B61-6, -7, -8	10-15	10 to 300	AF	800	Strategic bombs replacing B61-3.
B61-2, -5	3/75	10 to 345	N, MC	625	Tactical bombs replacing upgraded and redesigned B61-4, -8 for west European March 1981.
B61-3, -4	5/75	10 to 345	AF, NATO	1,300	Tactical bombs replacing B61-2, B61-3, and B61-5.
B61-7	0.63	low to 1,200	AF	1,200	Replacing strategic B61-2, B61-3, and B61-5 bombs.
Airfield					
W334-100	1/57	<1 to 12	A, MC, NATO	700	A portion has been replaced by new 8-inch W76.
W334-100	10-83	0.1	A, MC, NATO	900	To be replaced by non-enriched-uranium W62 beginning 1981-82.
W76-100	0.61	0.8	A	40	May have been converted to non-enriched-uranium version.
W76-100	10-84	1.1	A, MC, NATO	300	Production completed August 1985.
Intermediate- and short-range missiles					
W30/Perwing 1A	3-63	63, 200, 400	NATO	100	U.S. missiles were replaced by Perwing 1A1B, 1983-85. Held in U.S. custody for F2 West German air force missions, which will begin withdrawal in 1983.
W70-0, -1, -2A, Lance	0/73	1 to 100	A, NATO	900	Follow-on Lance replacement cancelled.
W70-3A, Lance	5/81	<1 to 1	A	330	May have been converted to non-enriched-uranium version, in storage at army depots in U.S.
W30/Perwing 1B	2-63	3-50	A	100	Withdrawal under RFP Treaty will be completed by May 31, 1981.
Submarine-launched ballistic missiles					
W69/Poseidon C3	5/70	30	N	1,800	Final 11 submarines to be retired 1985-87.
W79/Trident 1 C4	0/78	100	N	3,175	Approximately one half to be used on Trident II sub. 1983-2000.
W89/Trident 1 D5	9/88	475	N	200	Plan to produce 200 per year throughout 1990s.
Intercontinental ballistic missiles					
W52/Atlasman A	3-63	1,300	AF	456	To be retired.
W52/Atlasman B	3/70	170	AF	610	Planned replacement by Min 12A/W78 and Min/W87.
W71/Minuteman II	0/78	336	AF	420	Planned between Oct. 1979 and Feb. 1983.
W87 GMK	4-88	300	AF	525	200-600 more for small ICBM if deployed in late 1990s.
Air-to-surface missiles and cruise missiles					
W80/SSM	10/71	170	AF	1,100	To be replaced by W80/SSM-1, 1984-88.
W80/SSM-1	12-83	3 to 150	N	325	SLCM, 750 planned; could cease at 400-430.
W80-1A/CLM	12-81	5 to 150	AF	1,880	Production ceased.
W80-1A/CLM	7-80	5 to 150	AF	10	First operation of B-52H squadron planned for 1983, so some 1,300 could be produced.
W80/CLM	0-88	2 to 150	AF	250	Being withdrawn under RFP Treaty. Warheads could be salvaged or used in other systems.

*Weapons attributed to period or complete unknown in 1992. *Weapons in production. A: Army; AF: Air Force; MC: Marine Corps; IN: Navy; MDO: non-U.S. delivery systems; SSM—short-range attack missile; SLOM—sea-launched cruise missile; ALCM—air-launched cruise missile; ACM—aircraft-carried or launched cruise missile; GLCM—ground-launched cruise missile, in weapons form, 600 km; 600 km for "cruise" and 600 km for "cruise." The number following the number indicates the year in which it was introduced into the inventory for service. 1992 showed 1992.

[illegible]

42 The Politics of the American Education

C-809

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
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Table 2

REDUCTION OF THE U.S. NUCLEAR WEAPONS STOCKPILE
BY 5.5% PER YEAR

<u>Year</u>	<u>Warheads (using tritium)</u>	<u>Annual Reduction (at 5.5%/year)</u>	<u>Cumulative Reduction</u>
1990	20000		
'91	18907	1093	1093
'92	17873	1034	2127
'93	16896	977	3104
'94	15972	924	4028
'95	15099	873	4901
'96	14274	825	5726
'97	13494	780	6506
'98	12756	738	7244
'99	12059	697	7941
2000	11399	659	8601

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response



News Release

TABLE 1

Natural Resources
Defense Council

Contact:

Stan Norris (NRDC) 783-7800

Bill Arkin (Greenpeace) 319-2511

Richard Fieldhouse (NRDC) 783-7800

May 3, 1990

U.S. NUCLEAR WEAPONS IN EUROPE FACTSHEET

There are approximately 4125 US nuclear warheads, nuclear artillery shells and bombs currently deployed in seven West European countries. The 435 remaining warheads for Pershing 1a, Pershing II and GLCM missiles will be removed by the end of May 1991 under terms or agreements associated with the INF Treaty which leaves almost 3700 nuclear warheads of five types.

These include: 725 155mm artillery shells (W48)
725 8-inch artillery shells (W33 and W79)
680 Lance warheads (W70)
160 ASW bombs (B57)
1400 Bombs
3660

Approximately 2825 nuclear warheads, artillery shells and bombs are deployed with US forces in Europe, 1820 of those in Germany. The remaining 1500 are kept under US custody for use by the armed services of seven NATO nations. In addition there are 400 submarine launched ballistic missile (SLBM) warheads carried aboard several U.S. ballistic missile submarines (SSBN) allocated to NATO warplans. An estimated 100 US nuclear tipped sea launched cruise missiles (SLCMs) aboard various surface ships and submarines may also be available for NATO nuclear strikes. Normally two US aircraft carriers are deployed in the European region, each carrying about 100 nuclear bombs for their strike and ASW aircraft. There are an additional 350 British nuclear warheads (bombs and SLBMs) integrated into US and NATO warplans. The approximately 500 French nuclear warheads are not formally integrated into those warplans but would be available for a nuclear war in Europe. There are currently 19 airbases in these seven countries with nuclear bombs stored for various kinds of US and NATO aircraft. Nuclear detachments at two Turkish bases (Erincik/Alanya and Etiler) will be disbanded by mid-1991. The base at Biscuits in the UK is scheduled to host the F-15E nuclear capable Strike Eagle. The new SRAM-T (Short range attack missile-tactical) air-to-surface missile, now under development, could be deployed to many of these bases.

US NUCLEAR WEAPONS IN EUROPE (May 1990)

GERMANY (63%)	
Bombs for US aircraft	425
Bombs for FRG aircraft	75
155mm artillery shells for US units	525
155mm artillery shells for BR, UK, FRG	130
8-inch artillery shells for US units	400
8-inch artillery shells for BR, UK, FRG	180
Lance warheads for US units	320
Lance warheads for BR, UK, FRG	280
Pershing II missiles and warheads	100*
Pershing 1a warheads	100*
GLCM and warheads	25*
	2585

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	UNITED KINGDOM (15%)	
	Bombs for US aircraft	400
	ASW bombs for US, Dutch and UK aircraft	100
	GLCM warheads	100 ^a
		600
	ITALY (11%)	
	Bombs for US aircraft	150
	Bombs for Italian aircraft	50
	155mm shells for US units	50
	8-inch shells for Italian units	15
	Lance warheads for Italian units	40
	ASW bombs for US and Italian aircraft	60
	GLCM warheads	85 ^a
		450
	TURKEY (7%)	
	Bombs for US aircraft	125
	Bombs for Turkish aircraft	100
	8-inch shells for Turkish units	50
		305
	GREECE (2%)	
	Bombs for Greek aircraft	25
	8-inch shells for Greek units	40
	155mm shells for Greek units	20
		85
	NETHERLANDS (2%)	
	Bombs for Dutch aircraft	25
	8-inch shells for Dutch units	10
	Lance warheads for Dutch units	50
		75
	BELGIUM (<1%)	
	Bombs for Belgian aircraft	25

^a Warheads will be removed by May 31, 1991. There are also approximately 200 UK bombs for the UK aircraft stationed in FRO. Totals may not add due to rounding.

Source: Compiled by the Nuclear Weapons Database staff (Sean Morris, Bill Artin, Richard Fieldhouse) from the Nuclear Weapons Database, Nuclear Posture Statement and the SIPRI Yearbook.

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response

A-8

STATEMENT OF BRIAN COSTNER

MR. COSTNER: My name is Brian Costner. I am Director of the Energy Research Foundation in Columbia, South Carolina.

I want to address two issues today. First of all, one that has been mentioned by Mr. Cochran previously, and Mr. Patterson is certainly very aware of it at this point, and that is the issue of whether or not this is in fact a draft Environmental Impact Statement on continuing to operate a reactor or on restart. It seems clear that within DOE, certainly here at the Savannah River Plant, that most of the agencies and most of the employees who are involved in this continuing reactor operation program are in fact going to offices that probably have signs over the door that say, "Restart Program." I think that it is unfortunate that they chose a draft EIS to talk about a continuing reactor operation; I also think that it is very significant that they chose those words.

If you look at the history of how this EIS came about, what you see is that very clearly in 1988, unlike the description in the draft EIS, but much more similar to the description that Mr. Beard privileged in testimony in Columbia a few days ago, there are very significant reasons for closing down the reactors and deciding not to restart them. And in fact, in the fall of 1988, a very dramatic program began to take place, and that program was geared to trying to restart the reactors, not trying to continue to operate them, because in fact, if nothing had been done after the fall of 1988, there would be no doubt in anyone's mind that they would never be restarted. So, clearly, we are dealing within the Department of Energy with a restart program.

Now, further, as you continue on, what you see is that in December of 1988, the Energy Research Foundation, Greenpeace, and the Natural Resources Defense Council filed a lawsuit that caused these hearings to be held. The Department of Energy did not want to, in fact, go through an EIS process because, presumably, through an EIS not only do you have to actually talk to the public and provide some degree of information, however feeble; you also have to put some of your decisions on hold until the public has had its full right to comment. I think it appropriate, then, that at the scoping hearings in the spring of 1988, when the Department of Energy was

C-813

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	still not agreeing to in fact complete the EIS prior to restart, that most of the testimony at the scoping meeting dealt with precisely that fact: The public demanded that it was necessary for good government policy making to complete the EIS as part of the restart process. During that period, you also got a number of members of Congress who made similar demands.	
C-814	I would point out at this time that in the original notice of intent to prepare this EIS, the alternatives described were (1) to continue to operate K-, L- and P-reactors at SRP well into the future, and (2) terminate K-, L- and P-reactor operation consistent with other production options, i.e., the so-called "no action alternative." When the EIS began, the no action alternative was not to restart the reactors. By December of 1989, Secretary Watkins had agreed to complete the EIS prior to restart. The reason is fairly clear: Up until that time, they had assumed that they would be able to restart the reactors either during 1989 or very early in 1990, and it was clear to them that they could not give the public full ability to have input into the EIS process prior to that date. And so, until that point, they were unwilling to complete the EIS as a condition to restart.	
	By December of 1989, it was so obviously clear to everyone within the Department that in fact, restart could not start go-ahead that early, that Secretary Watkins announced that they would complete restart. But they did announce that in fact the EIS was on the restart program.	
A-08-01	So, today, what we are doing is we are coming out and we are talking about a draft EIS where the alternatives have been changed. It is now the proposed action of the draft EIS to continue to operate the K-, L- and P-reactors at the Savannah River Site, Aiken, South Carolina, for the production of nuclear materials. This is DOE's preferred alternative, and represents no change to the current situation; i.e., no action. I think that that is very nonresponsive to the public comment, and in fact, what we are here to assess today as much as anything is whether or not the draft EIS does deal with the public comments provided during scoping. And clearly, during scoping, the intent of the public was to demand that the EIS be conducted on the restart program.	The CEQ has stated that there are two distinct interpretations of "no action." One involves situations in which there is an ongoing program initiated under existing legislation and regulations. In these cases, "no action" is "no change" from current management direction. "Therefore, the 'no action' alternative may be thought of in terms of continuing with the present course of action until that action is changed" ("Forty Most Asked Questions Concerning
	I think that that is significant because what we are dealing with here are some very dramatic changes at the Savannah River	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
C-815	Plant, extremely dramatic — operator training, safety improvements, and physical improvements to the facility. By continuing to say that this is an EIS, a continuing operation of the reactors, what they in essence do is allow themselves to restart the reactors whenever they bloody well please, which is obviously what Watkins has in mind since on May 1, before the draft EIS was completed, he announced the next day for restart, and instead, if you were to look at the EIS as a policy on the condition of restart, what we would be here doing today is reviewing what the restart program itself is doing to the environment and to the public safety, and they would have to complete that restart program and complete the EIS on it prior to making a decision on restart.	CEQ's National Environmental Policy Act Regulations, 46 FR 18027). Because extended outages for modifications are part of reactor operation (and recognized as such by the NRC for its licensees), the resumption of production following such an outage is also part of the continuing operation of the reactors. Also, please see the response to Comment A-07-02 on reactor operation.
	So, therefore, I think that it is fundamental that the Department of Energy go back and seriously reevaluate not only a lot of the specifics that have been criticized, but the very fundamental law in the draft EIS, which is that it doesn't acknowledge the fact that the restart program is very real, and that that in fact should be the issue of discussion.	
	[Additional DOE responses to Mr. Costner's comments are presented with his written submittal.]	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-9	STATEMENT OF JOAN KING	
	MS. JOAN KING: Good morning. I am Joan King, and I represent myself. I have the Environmental Impact Statement here, which states what will be done. I also have my own newspaper clipping file on the nation's nuclear weapons, that I've kept for awhile. It contains the versus accidents, the miscalculations, the coverup, and sometimes, the downright lies that have come out of our nuclear weapons plants — plutonium wastes stored illegally at Rocky Flats, ground water beneath the Savannah River Plant with levels of tritium 1,000 times higher than the Government publicly admitted, intimidation of the Nuclear Regulatory Commission by nuclear industries, health hazards, lack of independent investigation and review, suppression of reviews that were done, and I could go on for a long time. This is not underground stuff; these are newspaper clippings of Government reports, of testimony before Congress, of some leading newspapers and magazines in this country.	
	And now, the DOE is saying, "Whoops, sorry, we changed." I don't believe it, and I don't believe that it will change. I don't believe that it can change, for the very reason that it happened in the first place. The machinery that governs a vast nuclear weapon industry is not one person who can report or one thing that can be fixed; it is a huge, sprawling bureaucracy made up of thousands of human beings. Past accidents and mistakes occurred because of human error, because of human inattentiveness, because of human ambition, and because of human denial — and this is unlikely to change. We know that the same is possible; given enough time, it will happen. And we are dealing in an area where we cannot afford to have these things happen. One prior speaker talked about an airplane crashing; another gentleman talked about a car. When these accidents occur, a horrible thing is happening: People have been hurt, even killed. But, it's over; it happened in time.	
	In the nuclear world, time is highly different. If you release nuclear radiation, radioactivity, it stays with us for hundreds, thousands of years. The half-life of plutonium is over twice all recorded history, and that, people, is what is being made, and it is what is being released. Children are being born in Japan even now who are abnormal because their parents suffered genetic damage 45 years ago. A quarter of a million people living around Chernobyl	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	are dying, are sick now, and they will be for a long time to come, making another generation. This is what radioactivity is made of, if it escapes, when it escapes — and it has. The deadly stuff will be with us virtually forever in some way.	
A-09-01	Now, we're told to trust the experts. These are the very experts who gave us the problem in the first place. No one yet has found a way to change the natural of radioactivity. You can bury it, you can encase it in glass, you can contain it in cement. But you cannot assure that it will not escape. Anyone who gives you this assurance is lying. We are told that by Du Pont that at the Savannah River Plant, it is impossible for radioactivity contamination to escape the burial type. They call it an "outcrop." Or if it did, it would take 2,000 years. The first outcrop was discovered in Atlanta, and there are 35,000 gallons of radioactive toxic wastes buried under the Savannah River Plant right now.	DOE is not aware of any outcrops of SRS radioactivity beyond SRS boundaries, and certainly none in Atlanta.
A-09-02	In God's name, how can we consider reopening these reactors until we solve the problem that we have already created? To say that it is necessary for national security is a horrible, sick joke. The atomic age has been with us for 45 years, and that is, for us, a lot of time. But it is a mere blink in history or in geological time. Nuclear waste is deadly for all recorded instances of plutonium waste. The nuclear waste has doubled in the last 10 years. My God, what are we doing to our children? I have no other comments. Thank you very much.	DOE has committed to a program of environmental restoration of its sites, including SRS; this program, which is under way, is funded independently of reactor operation. Other EISs (Waste Management Activities for Groundwater Protection, DOE-EIS/0120, and Defense Waste Processing Facility, DOE-EIS-0082) and the DOE Environmental Restoration and Waste Management Plan, DOE/S-0070, describe waste management activities at SRS in detail. DOE's proposed programmatic EIS on Waste Management and Environmental Restoration will provide a complex-wide assessment of available options. DOE will manage SRS wastes from continued operation in accordance with the requirements of EPA, SCDHEC, and DOE Orders, as described in Section 2.1 and Chapter 5 of this EIS.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-10	STATEMENT OF VIRGINIA KING	
A-10-01	MRS. VIRGINIA KING: Good morning. I'm Virginia King, and I represent myself. I didn't expect to be doing this, but while I'm here, I might as well say that I think that reopening the Savannah River Plant is insane. We need to clean it up before we restart. I hope that we never restart it, but we need to clean up the mess we've made. I do not feel safer, I don't feel secure. I don't feel any safer. Thank you.	Please see the response to Comment A-09-02 on waste management and environmental restoration.

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response

A-11

STATEMENT OF ROBERT F. OVERMAN

MR. OVERMAN: My name is Robert F. Overman. I'm not representing anyone but myself and other knowledgeable people. In regard to radioactivity, if radioactivity did not exist, you would not, either. Your bones contain radioactivity. Yes. You've been living with it all your life. The sun shining. The nuclear process. Radioactivity. So, what's the big deal?

But I would like to address the environmental aspects to one small degree. First of all, I would like to say that quotations in newspapers are not necessarily accurate. It's a matter of a fuel meltdown that has been bandied about. I had a person who was directly involved in that tell me that that was antimonium beryllium rock. Fuel rods contain uranium. Antimonium beryllium is not uranium. Well, how these things get about — it was called a fuel rod in some of the newspapers.

The next thing that we read in the newspapers is that this fuel rod released radioactive cesium, and that endangered the population around the Savannah River Site. How beryllium is going to release cesium is beyond me.

Now, I would like to address one other report that was reported in the papers. It was the report issued by the Oak Ridge Associated Universities. This is the one where we have the startling news that there were four excess cases of leukemia in this vicinity. The next thing that we read in the paper is that these cases of leukemia were due to radioactivity. The author of that report stated that there was absolutely no correlation between those cases of leukemia and radiation.

Now, oddly enough, the papers did not report another factor that was issued by this same report: When you consider all cases of cancer among the employees over a period of years, there have been quite a few fewer cases of cancer than would be expected. Now, if you're going to say that these four cases of leukemia are due to employees working out there, you must also accept that there have been a lot fewer cases of cancer among the same employees because they work out there. You can't have it both ways. If you say that one is due to working out there, then, the fewer cases of cancer

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	would have to be accepted, too. You know, statistics do not prove the cause of anything. I'm reminded of the town that passed an ordinance that said that you could not smoke in the town. Some women wanted to smoke, so, in their petition to the authorities, they said that between 1960 and 1970, women started smoking — a lot more started in there. Also, during the same period, the infant mortality rate decreased. Therefore, smoking is good to reduce infant mortality. Now, that's using statistics to prove your point.	
A-11-01	All right. In conclusion, I would like to see the EIS reexamined to make sure that statistical correlations are based on facts, not what's read in the paper, and that it be emphasized that correlations are not proof of the cause. Thank you.	Please see the response to Comment A-05-02 on this EIS.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-12	STATEMENT OF SAM BOOHER 2387 ROSWELL RD. AUGUSTA, GEORGIA, 30907 DOE, Envir. Div. Aiken, SC RE: Public Hearing 8 June on DEIS I am not for the closing or even a cut back of the operation of SRS. It is not in this countries best interest to depend on foreign powers for our nuclear fuel & support. FIRST (Discussion Point)	
A-12-01	I know that all of the seepage basins at SRS are closed or are scheduled to close. So it appears that only now is SRS trying to understand the Regional Hydrogeological system and in particular the aquifer system under their seepage basins. HOWEVER....	The DOE base of knowledge on the hydrogeology of the SRS has been in a process of continuing improvement since the establishment of the Site in 1950. For a detailed description of the SRS geology and subsurface hydrology, including areas of the reactor seepage basins, please refer to the Final EIS, <u>Waste Management Activities for Groundwater Protection, Savannah River Plant, Aiken, South Carolina</u>, Volume 2, Appendixes A and B, December 1987.
A-12-02	I have not seen nor read anything that explains the new system of "direct discharge of disassembly basin purge water." Does this mean that instead of seepage basins, this same water with tritium waste will be discharged directly into the Savannah River? The public needs to know the specific details of this new method that will replace the seepage basins concept.	The potential redirection of the processed disassembly-basin purge water from seepage basins to an NPDES-permitted outfall, as described in Section 2.1.2.3.6 of the EIS, is being reevaluated to eliminate this source of groundwater contamination as a result of agency and public comments. As indicated in Section 4.1.2.3 of the EIS, discontinuing the use of the seepage EIS basins will result in greater, but still minute, public exposure to tritium.
A-12-03	While Area F seepage basins received low-level radioactive waste water from 1955 to Nov 1988 for the purpose of delayed release into surface streams. Further info. is needed on what materials from Areas H and F seepage basins reached surface streams, where these streams emptied and what happened to those materials?	DOE addressed these issues in the Final EIS, <u>Waste Management Activities for Groundwater Protection, Savannah River Plant, Aiken, South Carolina</u>, December 1987; Volume 2, Appendix B contains relevant information.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	Area H seepage basins have significantly affected groundwater quality within underlying water-tables and the McBean aquifer. The contamination contained: mercury, nitrates, gross Alpha, non-volatile Beta, total radium and tritium. What long term affects can we expect?	
A-12-04	With uranium discharge from 1974 to 1984 into Tim's Branch Creek. What became of this uranium waste? Area D Oil seepage basin. Today testing shows seepage.	Between 1955 and 1985, 24.6 curies of uranium were released into Tim's Branch; this amounts to about 92,000 pounds of natural and depleted uranium. Since the construction of the liquid effluent treatment facility in M-Area in 1985, uranium releases to Tim's Branch have been negligible. Most of the uranium is in the sediments of Tim's Branch (above Steed's Pond) and in the Steed's Pond dam site (which drained in 1984). Concentrations of uranium in Tim's Branch sediments average 1,550 parts per million just downstream of the M-Area discharge into the creek, and decrease to about 20 parts per million near the mouth of the creek (confluence with Upper Three Runs Creek). Uranium concentrations as high as 6,100 parts per million have been reported in the sediments of the Steed's Pond site, which equates to an activity level of about 27 picocuries per gram of sediment.
A-12-05	Area D Coal Pile Runoff Basin drains into a small tributary then into the Savannah River swamp. Groundwater monitoring data shows: radium, gross Alpha and tritium levels in excess of Primary Drinking Water Standards. Also, metals, radioactivity and sulfate above drinking water standards and elevated iron, manganese, cadmium, chromium, arsenic and TDS. Area K and H Coal Pile Runoffs show similar data. Now knowing this, why must future operations have Coal Pile Runoffs? DOE needs to provide the public an answer to these problems. SECOND	SRS uses coal to produce the steam and much of the power used in the operation of nuclear materials production and support facilities. DOE is considering the construction and operation of a new 200- to 350-megaWatt, coal-fired, steam electric powerplant to replace power production capacity currently provided by the D-Area Powerhouse. DOE plans to prepare an environmental impact statement that will identify this problem as a potential issue and will discuss mitigation in the new facility and elimination of the source at the old facility.
A-12-06	Carolina Bays are a rare, endangered habitat and in a natural state contain unique wildlife. Where possible CAROLINA BAYS at SRS should be returned to their natural state to include if necessary replanting of Cypress Trees.	DOE has no plans to restore Carolina bays as the commentor suggests, but does have a system of environmental "set-asides" managed by the University of Georgia Savannah River Ecology Laboratory (SREL) that are considered essential to provide

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	Is any effort being made to return Area M "Lost Lake" which is a Carolina Bay to its natural state now that is no longer being use as a seepage basin? THIRD	(1) locations protected from public access for long-term environmental research and (2) undisturbed areas for obtaining control data required to evaluate the impacts of manipulative management strategies on similar ecosystems. All of the Site's most valuable and unique Carolina bays receive protection as environmental set-asides. DOE did not intentionally use Lost Lake as a seepage basin, but rather used it to receive overflows from the M-Area Settling Basin during heavy precipitation. Lost Lake is receiving restorative action following the remediation and closure of the Settling Basin.
A-12-07	The requirement to do an Environmental Impact Statement should include the requirement to identify all of the plants and wildlife that are affected by operation of this facility, and an effort made to identify and protect the rare, threatened and endangered species. When we monitor the status of wildlife, it can be an indicator as to what will eventually happen to our people. Today SRS is a 300,000 acre tree farm that also farms deer and turkey just like they do pine trees. DOE has given the PUBLIC the impression they are not concerned with "WILDLIFE." This may sound unfair but how many acres of SRS have been <u>planted</u> in Hard Mast Trees that are permitted to produce food for the Wildlife? NONE. How many acres are planted in pine timber production? - 300,000 acres! I rest my case be saying DOEs focus is on ensuring compliance with specific regulations, not the care or the continued existence of the installations plant and varied Wildlife ecosystems. Because we have no idence that DOE has given wildlife and its habitat any concern, it is suggested that Westinghouse take it upon its self to exercise a "good neighbor policy" and support and assist rare, threatened and endangered plants and wildlife at the Savannah River Site. One easy method that would improve Public Image, would be for Westinghouse to insure that a significant percentage of the installation be planted in Hard Mast tree for the purpose of feeding the wildlife that could exist if native food were available.	As explained in Section 3.6 of the EIS, the SRS contains abundant wildlife in terms of both variety of species and population. Sections 3.7 and 3.8 list representative species. Sections 5.2 and 5.3 describe the status of compliance with the Endangered Species Act and the cooperative effort of DOE with the U.S. Fish and Wildlife Service to mitigate impacts to fish and wildlife resources.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-12-08	A second method would be to let any water cool before it is discharged back to nature. Why are you currently destroying the Savannah River and its swamp? IN CONCLUSION Realizing our first concern is that the future public not suffer as a result of mistakes we make today, I disagree with the 4 May, Augusta newspaper that "The U.S. needs SRS Tritium and part of the cost must be born by the Environment." While Nuclear Weapons reduction is on going at the Major Nations level, the small nations are trying to build their own. Thus, we will always have a need for SRS — Nuclear Weapons can not be uninvented! The Newspaper is wrong. Westinghouse can solve the Environmental Problems and then bring the Reactors on line. All I am asking is <u>"fix the truck before we start it"</u>	Hot water from P-Reactor is cooled by recirculating through Par Pond. L-Reactor water is cooled as it travels through L-Lake before discharging to Steel Creek, which flows to the Savannah River. A recirculating cooling tower, scheduled for completion in 1992, will provide cooling for K-Reactor; cooling-tower blowdown will discharge to Pen Branch, which flows to the Savannah River. DOE is considering the acceleration of the construction schedule for the cooling tower. All cooling water discharges that eventually reenter the river meet NPDES permit limits. DOE has expanded the discussion of mitigation for aquatic resources in Section 4.5 of the Final EIS.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-13	STATEMENT OF RICHARD W. HUNT 1208 CRESTVIEW DRIVE NORTH AUGUSTA, SC 29841 803-279-0543 Mr. S. R. Wright, Director Environmental Division U.S. Department of Energy Savannah River Operations Office P.O. Box A Aiken, South Carolina 29802 Re: Draft Environmental Impact Statement Continued Operation of K-, L-, and P-Reactors Savannah River Site, Aiken, South Carolina	
	<u>COMMENTS * Individual</u>	
A-13-01	Cursory review of the Department's EIS indicates that a broad based analysis has been made of the impact on the environment. The statement also contains a detailed analysis of present needs for operational reactors to meet our nation's requirements. Alternatives for partial implementation of continued operation have been assessed in brief but comprehensive terms. As an individual with over four decades of professional work in the nuclear and chemical industries I fully approve of the proposed Draft Environmental Impact Statement issued May 1990 by the U.S. Department of Energy. In deference to those who disagree with the plans outlined may I suggest that, given the charge by the Presidentially approved Nuclear Weapons Stockpile Memorandum, this proposal addresses its responsibilities in a most commendable manner. In particular I am impressed with the public risk Evaluation Tables which delineate common risks vs. those arising from continued operation of SRS reactors. All opposed to nuclear production would do well to further examine this data. The risks are negligible when compared to the everyday risks of normal life.	In December 1989, Secretary Watkins informed the Congressional Armed Services Committees in a letter that "because the decisionmaking process will be enhanced by the information and opportunity for public comment presented by the EIS, the Department will complete the EIS before it makes any decision to resume operating the defense production reactors at the Savannah River Site."

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	My personal view and hope is that prompt restart of reactors need not await issuance of a final statement of impact. The need is clear. The job is progressing at a less than desirable pace due in part to the well-known syndrome of "Paralysis by Analysis". Let's get on with the job and with the confidence of the traditional American work ethic. Thank you for consideration of my personal views. Sincerely, Richard Hunt	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-14	STATEMENT OF JOHN HOPKINS TESTIMONY - SRS HEARING ODELL WEEKS CENTER AIKEN, SC 6/8/90	
A-14-01	My name is John Hopkins. I live here in Aiken at 809 Holly Lake Road. I also have farms and homes in both Greenville and Anderson Counties, South Carolina. I stand before you today as a concerned citizen of this state and nation. I do <u>not</u> work for Westinghouse or Bechtel. My wife <u>does not</u> work for Westinghouse or Bechtel. In fact, no one in my family works for or directly benefits from the Savannah River Site in any way. I am here this morning simply because I believe that responsible citizens have a right to participate in this process. I am proud to be a conservationist. I was named South Carolina's Youth Conservationist of the Year by the National Wildlife Federation. My work in the Conservation of Natural Resources Program was recognized by the John Deere Foundation with a college scholarship that helped to pay for my education. Today, my farm in Greenville is a recognized model for and has been named the states best in its wildlife management program by the South Carolina Wildlife and Marine Resources Department. I actively participate with the U.S. Department of Agriculture and Soil Conservation Service in its Conservation Reserve Program. I share this to simply illustrate the fact that absolutely <u>no</u> one in this room, or no one testifying before you in Savannah or Columbia is any more concerned about the environment, ecology, or conservation than am I. I believe in the Savannah River Site. I believe in the people of Westinghouse and Bechtel that have been entrusted to operate the site. I believe in their commitment to responsibly manage this facility. I am quite confident they will carry out their mission. I am delighted and genuinely encouraged by the fact that apparently the cold war is ending and global relations are improving. I sincerely hope the trend continues. However, I believe the need for a strong deterrent to insure peace is still great. I am keenly aware that talk is cheap and that no treaties are in place that would negate this need. Tritium is a vital, perishable commodity. The reliability of our supplies must be above	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	question. I also recognize the value of the Plutonium 238 used in deep space probes. I certainly want to see these continued as man tries to learn more and have a better understanding of worlds beyond us. To recap, I wholeheartedly support the Savannah River Site and the restarting of the reactors there. I have observed with much interest the deep commitment to proper training and responsible management of this facility. I have had the opportunity to get to know the leadership of the site. They are my neighbors, fellow civic club members, committed members of our community. They have consistently exhibited a professional, deep seeded commitment to do whatever is necessary to insure safety, security, and responsible management. I have confidence in them. Let me close on a personal note. As a manager for Fortune 500 company, Aiken represents my sixth location and corporate move. I have lived in Texas, Tennessee, Ohio and South Carolina. But as a native South Carolinian coming to Aiken was like coming home. I waited a long-time to get married and start a family. But, as a new father and concerned parent, I want only the best and brightest future for my children. I appreciate the quality of life Aiken offers. I remain deeply committed to the responsible use of our natural resources. I want only the best people and responsible policies to help insure that this is done. I am both comfortable with and confident of Westinghouse/Bechtel's ability to properly manage the Savannah River Site to insure that there is a tomorrow and that it offers as much hope and promise for my children as it did for me and the five generations of my family that lived here before me. I trust that it will! Thank you for the opportunity of sharing.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-15	STATEMENT OF ELIZABETH S. CHRISTENSEN COUNTY OF AIKEN REPUBLICAN PARTY POST OFFICE BOX 761 AIKEN, SOUTH CAROLINA 29801 June 8, 1990 Statement for the EIS hearing on the Savannah River Site Presented by Betty Christensen Chairman, Aiken County Republican Party	
A-15-01	The Aiken County Republican Party wants to go on record as being in strong support of the Savannah River Site and the restart of the reactors. In the past, the Aiken County Republican Party has been active in showing it's support: 1. The Republican members of Aiken City Council were the first to introduce a resolution in strong support of the SRP. Following the passing of this resolution by the Aiken City Council, many other governmental bodies passed similar resolutions. 2. The ACRP conducted a petition drive in support of the SRP which obtained close to 10,000 signatures 3. The ACRP held a Pro SRP Rally at the Odell Weeks Center in Aiken at a time when all other rallies held were by activists against the plant. Now, the Aiken County Republican Party would like to state that it still strongly supports the continued operation of the SRS. We believe that there is, and will be in the foreseeable future, a continued need for the United States to maintain a strong defense in order to sustain world peace. In this era of nuclear proliferation we can not afford to disarm. We strongly encourage building the proposed New Production Reactor as soon as possible in order to have state of the art safety features, including a containment dome.	Comment noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	We propose, for the future, the building of an energy center at the SRS with the construction of a cluster of standardized nuclear reactors, such as those developed by Westinghouse. For a cleaner atmosphere and affordable power, we believe that the US must go to expanded use of nuclear energy, not fossil fuels, to supply our future power needs. Because of it's size, the SRS is the safest place in the Southeast to build and operate nuclear reactors. Also, because of it's on site state of the art waste processing facility, BWPF, it is the most economical and safest place to operate reactors. In conclusion, we would like to point out that those who are <i>most knowledgeable</i> about the SRS have chosen to put their stamp of approval on it by voicing their opinion in the strongest way possible. Approximately 95% of those who have retired from SRS have chosen to remain living in the area.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-16	STATEMENT OF JOHN MCCLANATHAN	
A-16-01	MR. MCCLANATHAN: Thank you. I'm John McClanathan. I'm speaking as a concerned citizen today. I'm very glad to have the opportunity to speak in support of the Savannah River Site and the restarting of the plant's reactors. It's galling to read in the papers that the same opposition faces appear in Savannah, in Columbia, and now, they're appearing here. Professional educators and self-styled experts, they presume to speak for what is best for the thousands of people in Aiken who support the SRS and the restart of the reactors. These good Aiken people are too busy working to come here and speak for the plant, while the professional educators, who have plenty of time for their posturing, would like you to believe that theirs is the voice of the majority. We are fortunate to have the Savannah River Plant in Aiken. The fine people that it has brought here, the millions of dollars of wages that benefit all of us, the support that the operating companies have given to many community activities, plus play the important role that the plant's products play in keeping the peace in the world, should make us proud that the plant is in Aiken. The antinuke agitators are intelligent; they know that the wild claims in statements they make are untrue and misleading, but they play to the emotions of the people and the natural fear that most people have of the unknown. We should not let such tactics influence our thinking. The safety record at the Savannah River operation should be recognized. The industrial safety record at the plant is the best in the entire US chemical industry, the best in South Carolina, and the best in the United States — a proud record. At the SRS today, we find second and third generation workers on the payroll. Based on all available statistics, there are no adverse health effects evident in Savannah River workers attributable to their employment at the plant. There is no higher incidence of cancer among Savannah River workers than among the general populace. Don't listen to statements which compare Chernobyl to the Savannah River reactors; the plants are not comparable. The	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	pressures and temperatures are much lower at Savannah River. A Chernobyl-type accident is inconceivable at Savannah River. The antinukes would like to talk millirems and the diagnose radiation levels to which the Savannah River workers and the surrounding area residents are exposed. The exposure of the workers is less than the natural background radiation in Aiken for all residents. The Government says that 5,000 millirems a year is the maximum safe level; exposure in Aiken for residents and plant workers is approximately 400 millirems a year. The US needs the tritium produced at Savannah River. Do not be misled by recent events in Russia and the rest of the world. We must be vigilant and maintain our present defense capability. Unilateral disarmament would be the height of folly. The Savannah River Site should resume operation, and Aiken residents overwhelmingly support this action. Thanks for this opportunity.	

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response

A-17

STATEMENT OF EDWARD D. ARNOLD

DR. ARNOLD: Thank you, Mr. Cumbee. My name is Edward D. Arnold. I am the Executive Director of the Atlanta Chapter of Physicians for Social Responsibility. I work with hundreds of doctors in the Atlanta area whose objective it is to bring to the public attention the medical consequences of nuclear weapons.

When I reviewed the Environmental Impact Statement submitted by the Department of Energy, I had the impression that it was more an advocacy document than an impartial report, and I'm grateful to Dr. Cochran for revealing to us who wrote it. Thank you.

A-17-01

Appendix A of that document is classified. I'm not sure why that's true, given today's circumstances. Judge Webster, who is Director of the Central Intelligence Agency, has testified that there is only a very remote that the Soviet Union could use its weapons, as has been projected by some people.

Please see the response to Comment A-06-01 on the need for tritium and other nuclear materials. DOE has revised Section 1.2 of the EIS to clarify that the NWSM, which is issued annually, considers changes in the world geopolitical situation.

Although I work with physicians, we try to broaden our scope of understanding and study, and we have spoke with and read the works of George Kenan. George Kenan is the scholar who, in the mid-forties, suggested that the policy of containment apply to the Soviet Union. For at least 12 years, George Kenan has said and has articulated in his writings that there is not a smidgen of evidence that the Soviet Union has any intention of invading Western Europe or launching a nuclear weapons strike against the United States. I submit that it is time to declassify Appendix A, and let the public see what the evidence is, and compare it with other evidence that is in the public domain.

I submit that current medical information be used in evaluating the effects of radioactivity on human beings. An epidemiologist in Great Britain, during World War II, noticed that children of women who had been X-rayed had a much higher incidence of leukemia and other cancers. She evaluated the statistics and found that her observations were absolutely borne out with statistics. You see the results today; there are signs on all X-ray machines in the United States, saying that women who are pregnant should not even be in the room. The first physicians who heard her testimony, before she had substantial documentation, pooh-poohed her ideas. But, she proved them right.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-17-02	The more recent studies have shown that the DOE and the NRC — Nuclear Regulatory Commission — statistics, the figures that are used in determining the risks of low levels of radiation are considerably lower than ought to be used. I propose that more current medical information be used in establishing the radioactive consequences to human beings of nuclear weapons production. Dr. Alice Stewart had even produced statistics which show that children of fathers who work in nuclear facilities are twice as likely to develop cancers in life. That's just the children whose fathers work in those facilities. I think that there is new medical information which needs to be applied to a revision of the Environmental Impact Statement which has been published in May 1990. Thank you.	The health risk estimates presented in Chapter 4 of this EIS are consistent with the most recent findings of the BEIR V committee of the NAS/NRC. As noted in Section 4.1.2.6, the cancer risk factor used in the EIS to estimate radiation-induced health effects is 4×10^{-4} per person-rem, or about half of that given for a single acute exposure in BEIR V. BEIR V also indicates that "for low linear energy transfer (LET) radiation, accumulation of the same dose over weeks or months, however, is expected to reduce the lifetime risk appreciably, possibly by a factor of 2 or more." Thus the risk factor used in this EIS for normal releases of radioactive materials is consistent with the findings of the BEIR V committee. Appendix B (Section B.1.5) discusses previous and current epidemiological studies of SRS workers and the neighboring populations.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-18	STATEMENT OF ELLEN G. SPEARS SANE FREEZE CAMPAIGN FOR GLOBAL SECURITY 92 PIEDMONT AVENUE, NE ATLANTA, GA 30303 (404)584-9902 COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT ON RESTART OF THE SAVANNAH RIVER REACTORS June 8, 1990 The Environmental Impact Statement on restart of the Savannah River Plant falls far short of its mission. First, it does not address the primary issue at stake: is there a need for more nuclear weapons materials? Secondly, no real alternative proposals are ever seriously addressed, including planning for a stable economy in this region less dependent on the arms race. Third, where the report correctly identifies problems that exist or would result from resuming operations, it does not explain how they will be overcome <u>before</u> public health is further endangered.	
A-18-01	<u>There is no demonstrated need for continued nuclear materials production at SRP.</u> This fundamental question which ought to have been addressed by the DEIS is skirted almost completely in the document. The need for plutonium and tritium is addressed only in a classified appendix reference to the January, 1989 Stockpile Memorandum. January, 1989, is ancient history in terms of current global realities. The overabundance of plutonium has been acknowledged by the Department itself. As regards tritium, when Georgia Senator Sam Nunn stated in 1989 that sufficient tritium existed for one and onehalf to two years, he said even at that point need would have to be evaluated.	Please see the response to Comment A-06-01 on the need for tritium and other nuclear materials and the NWSM.
A-18-02	Since that time, changes in Eastern Europe and the Soviet Union have brought dramatically closer the possibility of negotiating arms agreements reducing the nuclear stockpile. Yet, there has been no reexamination of the need.	Please see the response to Comment A-06-07 on the changing world geopolitical situation.
A-18-03	<u>Consider the Alternatives.</u> The task of the EIS is to evaluate alternatives. The document's disingenuous claim that the no action alternative is continued operation is misleading enough.	Please see the responses to Comments A-07-02 and A-08-01 on continued operation.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-18-04	But if the main fuel driving this process is economic, and I believe it is, no socioeconomic alternatives have been addressed. A primary concern ought to be for plant workers and their families. Why has nothing been done to use the incredible talents gathered here to plan to convert to industry useful in a peacetime economy? Planning should begin immediately to prevent any jobs being lost if the reactors are not restarted. Is there not more than enough work to be done, decommissioning C and R reactors and cleaning up the environment?	The scope of this EIS includes the continued operation of K-, L-, and P-Reactors and reasonable alternatives that meet the defined purpose and need for the action. Sections 4.1.1.1 and 4.3.1 discuss the socioeconomic impacts of the proposed action and the alternatives.
A-18-05	Specifically, the EIS should have addressed what the alternative uses of equivalent federal dollars in this region of South Carolina could mean for the people, the economy and the environment. Let Aiken, SC become a leader in civilian technical research and environmental restoration, instead of weapons production. Research indicates that prolonged local dependence on military production actually weakens the economy of a region. If the economy is not producing goods and services that people need and consume, decline appears inevitable.	Please see the response to Comment A-09-02 on waste management and environmental restoration, and funding.
A-18-06	<u>Address public health and environmental safety issues before restart.</u> Where the document does identify adverse health or environmental effects of renewed operation, it still does not deal with how those effects will be mitigated before restart. A whole range of oversight committees, the National Academy of Sciences, the Advisory Committee on Nuclear Facilities Safety, the Defense Nuclear Facilities Safety Board, as well as the Tiger Team have recommended safety upgrades.	Section 4.1.2.6 of the EIS describes the health effects of normal operation. The risks of health effects, which DOE maintains as low as possible, are extremely small compared to the health risks associated with natural and other radiation to which people are routinely exposed. Thus, no additional mitigation is warranted or planned. Section 4.1.3.1.2 of the EIS describes the features planned for the mitigation of accident consequences. Section 2.1 describes the concerns expressed about reactor safety and the reactor modifications to be completed as safety enhancements, both before and after the resumption of operations. As noted by Secretary Watkins on several occasions, the reactors will not resume production until he is satisfied about their safety. (Memo: Secretary Watkins, DOE to Secretary Cheney, DOD). The independent Defense Nuclear Facilities Safety Board will also provide its judgment on the readiness of the reactors to resume production.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-18-07	The EIS should require that all of these recommendations regarding fire standards, seismic standards, operator training, containment domes, and ultrasonic testing be implemented before restart. Take the waste problem alone. The Center for Defense Information stated in a 1989 report that "An estimated 99 percent by volume of all high level nuclear waste (the most radioactive) and 75 percent of low level nuclear waste in the United States have come from nuclear reactors operated for military purposes, including ship and submarine propulsion." There is already too much military radioactive waste. "Operation of K, L, and P reactors would generate about 1,130 cubic meters per year of TRU wastes, which eventually would be disposed of off SRS." Table 23, p. 2 79. When is eventually? There is no approved disposal site, WIPP shows no signs of being open soon. The best method of dealing with waste is source reduction, stop producing the materials that create the waste.	Section 2.1.2 of the EIS provides the basis for improvements to be completed before resumption of production. The priority assigned to each upgrade is related to its contribution to risk reduction and its feasibility. DOE will not resume production before the completion of all safety upgrades that might materially affect the risk of continuing operation. Also, please see the response to Comment A-09-02 on waste management and environmental restoration.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-19	STATEMENT OF VIC MONTENYOHL	
A-19-01	MR. MONTENYOHL: Good morning. My name is Vic Montenyohl. For the various intervenors present, I do have a Ph.D.; I don't use it; I'm known simply as "Vic" to everybody. I have been working, except for three years in the late 1940's, in the nuclear field since 1942. I moved to Aiken in 1953. I retired here 11 years ago. I had opportunities before I retired to transfer and move away; I elected not to. I stayed here after I retired, when I could have moved anywhere. Obviously, that provides my statement on what I regard to be the safety of the community. I worked for the DuPont Company. The DuPont Community, as many of you know, got its start in the manufacturer of black powder. In the days when that was the company's principal business, it was a company requirement that the plant manager live with his family on the plant Site, and that philosophy has largely colored the company's thinking ever since. And that should provide an answer to those in the Government and elsewhere who accuse DuPont of placing production above safety. Du Pont not only operated five reactors at the Savannah River safely, they built the three wartime reactors at Hanford, and the Clinton reactor at Oak Ridge, and operated all of them safely, also. Now, in 1950, before ground was broken at the Savannah River Plant, the Du Pont Company had a Site survey made that covered the entire region. This was not a Government requirement; it was not imposed by anyone else — it was the company's desire, and it has been used consistently since that time for all plants built by DuPont. They wanted to make sure that they were good neighbors in an ecological fashion, that no damage was done to the environment by the presence of the plant there. And the surveys have continued to this day and have shown that, from the plant margin outward, there has been no damage done to the environment. Now, in 1975, I asked the Director of the environmental section of the laboratory if he could state to me what the effect would be if all the airborne releases of the Savannah River Plant translated into a change in altitude. Now, as I think all of you probably know, all of us are struck by cosmic radiation all the time; it is	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
C-839	all around us. And the higher one goes, the greater or more intense is the cosmic radiation. That is the reason, for example, that the crew on a transcontinental passenger plane receives more exposure to radiation in one month's work than any person received at Three Mile Island. Now, I asked them, therefore, that the statement be made, "How much change in the area around Aiken it would amount to for all of the airborne radiation that took place from 1953 to 1975?" He was back in about two or three days, and the answer was six to eight inches. Now, there's probably been a few more inches since then, but if these intervenors are seriously concerned about that amount of radiation, they should immediately intervene to evacuate Colorado and New Mexico.	
	Now, a number of people here also have disputed the number of weapons that are needed. I humbly suggest that there is no one here who can give a valid number to that. You have to first state who your potential enemy is going to be and the terms of engagement. If you could state that you were going to limit the people to fighting with a sock full of sand and a sofa pillow, then, yes, you can determine how many nuclear weapons are needed. But, no one in this room and probably few in any of the Department of Energy can make such an estimate.	
	My final comment is that I assume that all of the intervenors came by walking or by bicycling, because if they did not, they probably contributed more pollution to the air and put more people in jeopardy than with the operation of the Savannah River reactor. I am highly in favor of the restart; in fact, I think that is overdue. Thank you.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-20	STATEMENT OF WILLIAM ROSS JOHNSTON FIRST PRESBYTERIAN CHURCH	
	Nuclear Presentation June 8, 1990	
A-20-01	My name is Bill Johnston. Though I have lived and studied in Texas, California, and Georgia, I speak as a pastor in Aiken for eight years, as a parent who has raised three children within a couple of miles of where I stand, and a resident who chooses to continue to live in Aiken. I am here today because I am tired of witnessing the attack upon the nuclear industry, locally and nationally that is little short of a bashing. It has been a bashing that has cheated many dedicated persons out of the credit that they deserve. Many of us believe that the recent revolutionary political and economic changes in Eastern Europe have been based to a significant degree on the effective deterrent that our nuclear weapons have provided. Surely after World War II we had to learn a lot in a hurry, and there is always a tuition to be paid for that learning, but the price that loomed over us without a nuclear deterrent is not something that we would desire to contemplate. The cause of freedom in the world owes a debt of gratitude to those who are being bashed in such a cavalier way by those who have been among the prime beneficiaries of their efforts. If our nation had been "conned into the better Red than dead mindset", the fad of recent memory, then the whole free world might well have shared the fate of the martyrs of Tianimen Square. And it is not simply weapons producers that have been the object of the bashers. Indeed, the organized lobbying groups are trying to make nuclear into an unacceptable option. This is tragic in a world that may well limit its ability to feed its people by the amount of power that it can generate. Japan, France, and other countries do not think that their societies would fare better, or that their environments would be less polluted if they become colonies of OPEC, or if they remained dependent upon acid rain producing fossil fuel power generation. They are pushing ahead with development under a responsible nuclear policy. We need to remember	Comment noted.

C-840

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	that it is not the lobbying groups that have prevented a Chernobyl in this country. Long before these people discovered the nuclear cause, responsible and reflective people in government, in industry were seeking to balance out the various national concerns. Many of these people are our neighbors, who even in retirement express their trust by continuing to live in the shadow of the reactors. That would be strange behavior for those who are involved in a covering up some terrible risk to people in the area.	
	We have not quit driving cars because of the risk of accidents....many here have not quit drinking in spite of the common problem of alcohol abuse....and many of us feel that our nation will be best served by a policy that balances out nuclear danger, including waste disposal with nuclear benefits from weapons production and power generation. We need to support the people who have brought us this far in the evolution of our nuclear industry during this time of bashing...Thank you.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-21	STATEMENT OF ART DEXTER	
	Good morning. My name is Art Dexter. I became involved in the hydrogen bomb project approximately 40 years ago at the Argonne National Laboratory. And for many years, I worked at the Savannah River Plant.	
	This morning, I come as a member and a spokesman for an ecumenical group named Prayers for Peace.	
A-21-01	<u>Statement of Prayers for Peace:</u> A group of us meet here in Odell Weeks Park to witness for peace every Friday. We have done this consistently since August 10, 1984 - almost six years now. It is our response to the arms race which continues unabated at SRS and elsewhere and which threatens the existence of life on this planet. Today, on June 8, 1990, we come again to pray with one voice for peace. Our prayer is our statement:	Comments noted.
	JUST FOR TODAY	
	Today...I will live in peace with God, my neighbor and myself. I will bring peace to my patch of this earth.	
	Today...I will believe that world peace is possible. I will remember that hope is the most important gift I can give my world.	
	Today...I will not be a party to pessimism nor join the indifferent.	
	Today...I will be happy. I will remember that my joy is up to me. I will carry my confidence to all I touch this day.	
	Today...I will love my enemies. I will pray for them. I will try to see our differences from their point of view.	
	Today...I will disarm myself of rage by extending my hand in help and forgiveness.	
	Today...I will know that peace is the child of justice -- that peace is more than the absence of war.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	Today...I will plant a seed of justice in this global village, in my city, in my neighborhood, in my family and in my heart.	
	Today...I will pray for peace for all those with whom I come into contact.	
	Today...I will test my love of peace by doing one act for peace.	
	Today...I will stand with Christ the Peacemaker. Amen.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-22	STATEMENT OF WARREN HILLS	
A-22-01	MR. HILLS: Thank you, Mr. Cumbee, Mr. Patterson. My name is Warren Hills, and I am President of Laborers Local Union No. 1137 in Augusta, Georgia. We have approximately 1,100 active members and approximately 600 who are employed at this date and time at the Savannah River Site. For the last 21 years, we have been involved at the Savannah River Site. We are the support craft of all the other crafts that work there, and we are part of the safety record. So, we have no fear of the Savannah River Site. I come today on behalf of those members and their families in the CSRA to let it be known here that we are in support of the restart of the K-, L- and P-reactors, and we are also in support of NPR being built at the Savannah River Site. We live here, we work here, and we intend to be here. And as long as the Savannah River Site is presently active, we intend and want to be a part of it. We had about 14 members who were off this morning and came here with me. Some of them had to go back to work at noon, and they've already gone, but I have at least seven or eight who are with me now. I would like for them to please stand to show our support for the Savannah River Site for restart. Thank you.	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-23	STATEMENT OF ANNA DANGERFIELD	
A-23-01	MS. DANGERFIELD: My name is Anna Dangerfield, and I'm a resident of Aiken County. I support starting of the reactors because I must say to you that it is still in control. To many people here in 1950, Aiken was shocked to hear that it was chosen as the Site for the Savannah River Plant. My grandmother and other people weren't talking about the new plant, but my parents did. My father supplied them with coal and fuel, and my mother taught the sixth graders. My mother worked in a movement where the mothers stood like sentinels by the lunchroom garbage cans at the school, watching the tremendous amount of food discarded because their kids had never tasted string beans cooked like they had. Our language provoked these newcomers, too. "No wonder my child failed spelling," one mother complained to my mother, "you draw your words so that none of us can understand you." Our language was not the only thing that the newcomers poked fun of. They criticized everything that they found to be different, especially the slow way of life. But, while they were adjusting to us and laughing at us, we were laughing at them, too. We never had witnessed so many people with slide rules and pocket protectors in our lives. Within six months to a year, these same newcomers began to contribute their time, talent and money to our churches, local civic organizations, and recreational activities. They improved whatever they came into contact with, and even began new clubs such as Town and Country. By the time I started elementary school, my friends included not only the locals, but the children of the DuPonters, those bomb plant folks, as well. By the time that I graduated from Aiken High in 1968, I never differentiated between DuPonters or others; we were all Aikenites. I left Aiken that year for two reasons: to go to college and to escape the atmosphere of a quiet, stable southern town. I returned eight years later because that quiet, stable town appeared to be a fine place to raise my children. My Aiken cousins and I have often been accused of glowing in the dark because of living so near a nuclear facility. I've always laughed this off with good	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	spirit because I've never feared radiation exposure from the Savannah River Site. I knew back in the 1960's that Sara Eliot, head of Du Pont SRP, would never allow harm to come to his daughter, his family or his friends. I feel the same thing about the management team at Westinghouse SRS today.	
	My husband, Tim, three sons, and I are fortunate enough to live in the area of Aiken which is experiencing heavy growth. Many of my neighbors and friends are Westinghousers. We eat together, play cards together, and enjoy our friendship. Already, they have begun to take an interest in the community of Aiken.	
	I have just finished serving as Co-Chairman for the community outreach for the Women of Woodside. In this capacity, I helped introduce the newcomers to various charities and volunteer opportunities available in our area. Many of these ladies are doers; already, they're volunteering their time and service to Meals on Wheels, the Helping Hands of these Children Shelter, tutoring the illiterate, and working with our special olympics. You can look on many civic boards and find the same newcomers or their family members serving in various capacities.	
	I know the caliber of people that these newcomers represent; I trust them in the management of Westinghouse, just as I trusted the ones before them for 39 years. I believe that they do the job that they're in charge of, and that they have the skills to amphetamines the tasks. I also believe that they are concerned about the safety of their family, friends and community in which they live.	
	I support the restart of the nuclear reactors because I have faith in those in charge. Thank you.	

C-846

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-24	STATEMENT OF TIM DANGERFIELD	
A-24-01	MR. DANGERFIELD: Thank you. My name is Tim Dangerfield, and I am a resident of Aiken County, and also a businessman and father of three boys. I am here today to speak in support of the restart of the K-, L- and P-reactors at the SRS Site. As each of you has seen in the previous hearings, the majority of people in favor of anything never show up in full force, and the minority is always present and making the loudest noise. I felt that it was necessary to speak so that you will know that Aiken County has always been supportive of the DOE SRS Site. Did you know that 80 percent of the employees at the SRS Site retire in the CSRA area, and that over 60 percent live in Aiken County? With this high number of retirees in this area, this must mean that Aiken and the SRS Site must be a great place to live and work. I know from history that SRS has 35 years of safe operation, and overall, has the best industrial safety record of any DOE Site. I know from reports and from my neighbors that many improvements have been made at the Site, particularly since Westinghouse has taken over the operation; improvements such as the emergency cooling system being implemented, the control rooms have been updated, and the staff has been increased. The biggest improvement has been in education; the Site has spent millions of dollars in training employees to understand their jobs and how to do them efficiently. The Site has five shifts, which means that one shift is always being trained; this is important and necessary for any nuclear operation. I am here to support the continuation of security of the United States, which I have been doing for 36 years. I keep hearing how the nuclear weapons are no longer needed, but those responsible for security of this nation know better. I agree with the editorial in last night's <u>Aiken Standard</u>, that with all the concessions, mostly pocketed by a falling economy and political structure at home, the Soviets will still maintain a powerful nuclear force. Further, Gorbachev could be replaced at any time by a dictator, who could offer the Soviet masses a campaign of military aggression to help restore their national pride.	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	The Soviet Union is not the only reason for the United States to maintain its nuclear might; other countries are developing a nuclear capacity. All I've heard is talk; our country does not and should not believe in talk. We need to continue to be prepared and ready to evaluate problems.	
	It is also obvious that the DOE has made an excellent decision by selecting Westinghouse, because Tuesday, in the <u>Aiken Standard</u>, Westinghouse was given an excellent rating. Let me quote your old DOE manager, Bill Casper: "Facility managers are displaying a sense of pride and ownership in these initiatives and improvement, with a parallel reduction in admissiveness and resistance. This shows a continuation of training, education, high quality employees and neighbors will continue to make SRS a safe and much-needed Site to help protect the freedom which we've enjoyed for over 200 years. I urge you to move forward as quickly as possible to allow Westinghouse to restart the three reactors." Thank you.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-25	STATEMENT OF BETTY RYBERG	
A-25-01	MS. RYBERG: My name is Betty Ryberg, and I'm a resident of Aiken. I have, this year, questioned and read and also played the devil's advocate about the Savannah River Site and its proximity to my home. My reason in doing so is that I very much value the quality of my life. My husband and I, and three young children, moved here 14 years ago because we felt that the quality of our lives was compromised. As a family, now, we are emotionally able to move, we are physically and financially able to move; and as a family, we choose not to do so. Let me emphasize that we have discussed this with our three teenagers. We have strong emotional, financial and physical ties to Aiken, but we are not entrenched; we are free to leave. And for those who carry a burden that makes that decision to leave difficult, please gain conflict in the fact that our decision to stay is very powerful. As a mother, my protective instincts are very strong. I have known all levels of employees at the Savannah River Site. Would I leave if I felt that the Westinghouse employees are politicians who are basing their decisions on self-serving motives? Yes. Yes, I would leave. But will I move? No. No. I, too, pray for peace. But, I'm the mother of three teenagers, and I'm very realistic. Not everyone worldwide is also praying for peace. I believe that our decision to live here makes a powerful statement. We are not stuck here. We choose to stay.	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-26	STATEMENT OF CLIFTON M. MCCLURE CONSUMER FUELS, INC. 7250 GOVERNORS DRIVE WEST HUNTSVILLE, ALABAMA 35806 205-837-5660 Yes. I'm Clifton McClure. I'm an engineer with the Consumer Fuels Corporation from Huntsville, Alabama. Consumer Fuels currently produces one of the best breathing air systems for removing toxic materials throughout the environment, and we sell quite a few of them. I'm a native of South Carolina. I'm a graduate of Clemson, and I flew to South Carolina in the National Guard and in the United States Air Force as a fighter pilot. Our objective in the South Carolina Air National Guard was to defend the approaches to the Savannah River project. That was many years ago.	
A-26-01	At that time, there was a concern about hot water being put back into the Savannah River ecosystem. This is still one of the major problems. To solve that problem, DOE is currently improving the K-Reactor by building a recirculating cooling tower to cool and reuse the water and not put it back into the environment. The cooling tower is now in construction. The current proposal by DOE is to restart the reactor before the tower is complete. This early restart will harm the environment, as it has done in the past, and will wipe out the benefits in 3 years of recovery time, which has already happened. Now, this is a simple problem, not complicated; it's hot water harming the environment. The United States may have an urgent requirement to bring its tritium production back online; it is materially vital for our national security and possibly for future civil needs in producing power by the other process, the other nuclear process that does not produce harmful effects. However, I'm hopeful that this can be done without further harm to the environment. In case the conflict between restart and the environment proves difficult to resolve, I wish to make all parties aware of the other solution on this particular problem. Several years ago, I observed powerplants being cancelled in the United States; these have similar	Please see the response to Comment A-12-08 on cooling systems.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-26-02	problems throughout — the range of problems for the environment that a weapons plant has; they're not the same problems, but they're similar. The nuclear powerplant solved the thermal problem with the cooling tower, such as those that are being now built by DOE. However, they're not what is counted on as the ultimate solution, particularly in the case of an emergency thermal accident, such as what happened at Chernobyl and Three Mile Island. The secondary line of defense for more than just hot water is to keep the essential cooling water for the plant available to prevent the accident from continuing.	
	Now, the second line of defense in many of these powerplants was a spray tree assembly. So, seven years ago, I directed my company to purchase one of these spray tree assemblies in case it was needed for this plant or other plants that perhaps had similar problems. Remember that the thermal accident is the greatest accident that could happen and leads to the other problems, including production of hydrogen, which was responsible for blowing Chernobyl apart and with six thermal spouts in the reactor shell at Three Mile Island.	A nuclear powerplant would use the spray assembly referred to in this comment as an emergency heat dissipation system under shutdown conditions; as described in Section 2.1.2.3.3 of the EIS, SRS reactors use the 25 million gallons of water in their respective area reservoirs for the same function.
	These spray tree assemblies are available. They were produced under NRC conditions and are code-stamped for that purpose. They provide the essential cooling water for a reactor of 538 megawatts with a modern design. The normal heat projection at these powerplants, remember, is through the cooling towers; the spray tree assemblies would provide the essential cooling water for the worst combinations of thermal accident at a powerplant. One reactor being shut down allows the cooling action mode, or local mode, while the other reactor is also being shut down in the emergency mode, with no outside water required for this, relying on the spray tree assemblies to keep the system cool in order to achieve safe shutdown.	
	These spray tree assemblies are very simple devices; they were navigably designed with no moving parts. Each tree consists of vertical fiber with eight horizontal stainless steel arms. Each arm is terminated with a spray nozzle. They were designed to remain installed in water for 40 years and operate quickly when pressurized with water. They are completely described in the accompanying brochure. Their requirements for installation are simple. They must be installed in a cooling pond. There are several cooling ponds on the site; so, they might not have to be constructed.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	They're also flow down ponds, which meet the size requirements in the new design K-Reactor.	
	Their requirements for installation are to be installed in a small size pond, with 10 to 20 acres or smaller. The second is that they must be provided with water at a comfortable pressure of 23 to 25 psi. There are no nuclear delays as to supply these parts in case these problems are unable to be resolved; they can be installed immediately. Having these available at the reactor would do some additional things for the environment as well as the plant: additional cooling to allow the reactor to run at any time at full power without production loss, even in the hottest months of the year; aeration of the water to remove chlorine; oxidation of the water; standby of alternate cooling in the case of maintenance for the cooling tower being built, with no production loss for these problems.	
	The site would contain all cooling needed in case of thermal emergency. So, I just want to make you aware that we have these available. Thank you very much.	
	[Mr. McClure submitted a brochure entitled "An Immediately Available Solution for Possible Use at the Savannah River Plant." Copies have been placed in the Public Reading rooms.]	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
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DOE/EIA-0147D
A- 12

**AN IMMEDIATELY AVAILABLE
ALTERNATE COOLING SOLUTION
FOR POSSIBLE USE AT THE
SAVANNAH RIVER PLANT**

**PRESENTED AT
THE REACTOR B1S HEARINGS
AIKEN, SOUTH CAROLINA**

JUNE 8, 1990

BY

CLIFTON M. McCLURE

**CONSUMER FUELS, INC.
7250 GOVERNORS DRIVE WEST
HUNTSVILLE, ALABAMA 35806**

205-837-5660

C-853

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response

CONSUMER FUELS, INC.

7250 GOVERNORS DRIVE WEST • HUNTSVILLE, ALABAMA 35806
Phone 205/837-5660

The United States may have an urgent requirement to bring the Tritium producing reactor back on line. This material is vital to our national security and also possibly to future civil needs for Tritium. However, I am hopeful that this can be done without further harm to the environment.

The K-reactor is being improved by having a re-circulation cooling system built with reliance on a Cooling Tower to cool the water. The cooling tower is now under construction. The current proposal by DOE is to re-start the reactor before the tower is complete. This early re-start will harm the environment and wipe out the benefits of the recovery time which the environment has already had during the present shutdown.

In case the conflict between re-start and the environment proves difficult to resolve, I wish to make all parties aware of another solution.

The company I represent, Consumer Fuels, Inc., of Huntsville, Alabama, has in inventory, ready for immediate shipment, a complete set of **spray tree assemblies**. This set of spray tree assemblies will solve this cooling problem. These spray tree assemblies are brand new and were originally manufactured for use by a nuclear power plant. They were built under the NRC requirements and are code stamped for use in that purpose.

These spray tree assemblies were built to provide the essential cooling requirement for a complete nuclear power plant consisting of two power reactors. Each reactor was capable of 1269 megawatts, or a total power of 2538 megawatts. Normal operating heat rejection at these power plants was also through the associated cooling tower(s). These spray tree assemblies were for additional cooling in the case of a thermal emergency at the power plant. Their design included providing the essential cooling water on-site for one of the worst combinations for a thermal accident at a power plant, that is, one reactor being shut down in the Loss Of Cooling Accident mode (or LOCA mode) while the other reactor was also being shut down in the emergency mode. No off-site makeup cooling water was required for this extreme thermal emergency when relying on the spray tree assemblies.

C-854

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	Spray Tree Assemblies	2 June 6, 1990
	These spray tree assemblies are very simple devices. They are an elegant design, with no moving parts. Each tree consists of a vertical pipe with eight horizontal stainless steel arms. Each arm is terminated with a spray nozzle. They were designed to remain installed in the water for 40 years and to operate instantly when pressurized with water. The spray tree assemblies are completely described in the attached brochure. The brochure includes their thermal performance and engineering data and drawings. The requirements for installation are simple: 1. They must be installed in a cooling pond. This pond is of relatively small size, approximately 10 to 20 acres or even smaller. 2. They must be provided with water being pumped from the lake at a pressure of 23 to 25 psia. There will be none of the usual delays for fabrication since Consumer Fuels has these in stock, ready for immediate shipment. For this reason, they can be installed in a relatively short time, and offer an alternate solution to the present cooling water problem. Having these spray tree assemblies would allow the reactor to start up without having to delay until the cooling tower is finished. They also offer other advantages once installed: 1. Additional cooling to allow the reactor(s) to run at any time, at full power without production loss, even in the hottest months of the year. 2. Aeration of the water to remove chlorine 3. Re-oxygenation of the water 4. Standby or alternate cooling in case of maintenance or outage of the cooling tower--no production loss for operating problems with the tower.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
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Spray Tree Assemblies

3

June 6, 1990

5. On-site self-contained alternate cooling in case of thermal emergency or thermal accident within the plant

These spray tree assemblies are immediately available and at a lower cost than can be purchased elsewhere.

Consumer Fuels, Inc., also has in stock additional items of nuclear safety equipment, including

- Charcoal Off-Gas Adsorber Tanks
- Hydrogen Recombination Vessels (Catalytic and Thermal types)
- Hydrogenation Radwaste Filters
- Sealing Air Compressors

Clifton M. McClure
Clifton M. McClure

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
CONSUMER FUELS, INC. OFFERS FOR SALE NUCLEAR QUALIFIED SAFETY EQUIPMENT I. SPRAY TREE ASSEMBLIES TO PROVIDE PLANT ULTIMATE HEAT SINK • Capable of dissipating 170.00×10^6 BTU/HR for safe shutdown during a nuclear thermal accident. II. CHARCOAL OFF-GAS ABSORBER TANKS • To provide nuclear process off-gas filtration III. HYDROGEN RECOMBINATION VESSELS: A. To provide safe catalytic recombination OR B. To provide safe thermal recombination of hydrogen-oxygen mixtures during a possible nuclear- fuel thermal accident. IV. HYDROMATION FILTERS • To remove all fine radioactive particles from reactor radwaste discharge liquid effluent V. SEALING AIR COMPRESSORS • To provide positive sealing pressure in a reactor pipe penetration during reactor shutdown or emergency or accident conditions. ALL EQUIPMENT IN STOCK AND AVAILABLE FOR IMMEDIATE SHIPMENT		

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
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SPRAY TREE ASSEMBLIES
TO PROVIDE ULTIMATE HEAT SINKS
FOR COOLING TWO EA. NUCLEAR POWER
REACTORS
OF 1269 MEGAWATTS EACH

offered by

CONSUMER FUELS, INC.
7250 GOVERNORS DRIVE WEST
HUNTSVILLE, ALABAMA 35806

205-837-5660

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
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ORIGINAL DESIGN OPERATIONAL REQUIREMENTS:

These Spray Tree Assemblies are designed to simultaneously cool the Essential Service Water (cooling water) for two Boiling Water Nuclear Power Reactors of approximately 1269 megawatts each reactor.¹ This thermal performance required is for two (2) conditions:

- (1) For normal shutdown of both reactors with no makeup water or offsite power available
- (2) For Emergency Shutdown with one reactor in the LOCA condition (Loss of Cooling-Emergency Accident Mode), the second reactor also being shutdown in the emergency shutdown mode, also with loss of makeup water and no offsite power to the plant.

The spray trees consist of a vertical pipe of 7 5/8 inches I.D. which has eight 1 1/2" diameter stainless steel "arms". Each arm is terminated by a Spraying Systems Co. nozzle (1 1/2CX SS 27-55).

The entire spray tree assembly operates with no moving parts. Operation simply requires water pressure at 23 to 25 psi at the base of the assembly.

The units are designed for an operational life of 40+ years with minimum maintenance.

¹ Design codes:
ANSI N45.2, Quality Assurance Procedure Requirements for Nuclear Power Plants
ANSI N45.2.2 and ANSI N45.2.9 through N45.2.13 QA Requirements for Nuclear Power Plants
NRC Regulatory Guide 1.27, Ultimate Heat Sink for Nuclear Power Plants
ASME Boiler and Pressure Vessel Code, Sections III and IX

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
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General Data on the Spray Tree Assemblies:

THE SPRAY POND DESIGN

The original cooling ponds were more or less elliptical in shape. They typically have:

Minor axis from about 320' to about 420'

Major axis from about 475' to about 600'

The spray trees were originally designed into two (2) adjacent concentric circles of water distribution pipes. Each circle was further divided into two divisions or halves. Each of the resulting four divisions was supplied with its own separate pump.

The larger circle will spray 23,530 gpm and the smaller circle will spray 13,940 gpm. The total water sprayed is 34,470 gpm. The larger circle mounted 66 trees while the smaller circle required 39 trees.

HEAT LOAD:

The distribution of the heat load for normal operations is considered to be a high of 106.85×10^6 BTU/H per pond with both divisions of the larger circle required. Under this mode the smaller circle is not spraying water. Emergency shutdown with a LOCA in one reactor also requires the larger circle in operation. The smaller circle can dissipate an additional 63.14×10^6 BTU/H.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	SPRAY TREE ASSEMBLIES: BASIC DATA The pond has two adjacent concentric circles of water distribution pipe. The larger circle sprays 23,530 gpm. The smaller circle sprays 13,940 gpm. The total water sprayed is 37,470 gpm. The larger circle mounts 66 trees. The smaller circle mounts 39 trees. The original total of 105 spray trees is available. Each spray tree assembly will spray 357 gpm @ 23 psi Each spray tree assembly will dissipate 1.619×10^6 BTU/H Normal operations dissipate 106.85×10^6 BTU/H, using both divisions of the larger circle The LOCA mode also requires the larger circle. The smaller circle will additionally dissipate 63.14×10^6 BTU/H. The design codes governing this spray tree design are: ANSI N45.2, Quality Assurance Procedure Requirements for Nuclear Power Plants ANSI N45.2.2 and ANSI N45.2.9 through N45.2.13 QA Requirements for Nuclear Power Plants NRC Regulatory Guide 1.27, Ultimate Heat Sink for Nuclear Power Plants ASME Boiler and Pressure Vessel Code, Sections III and IX	

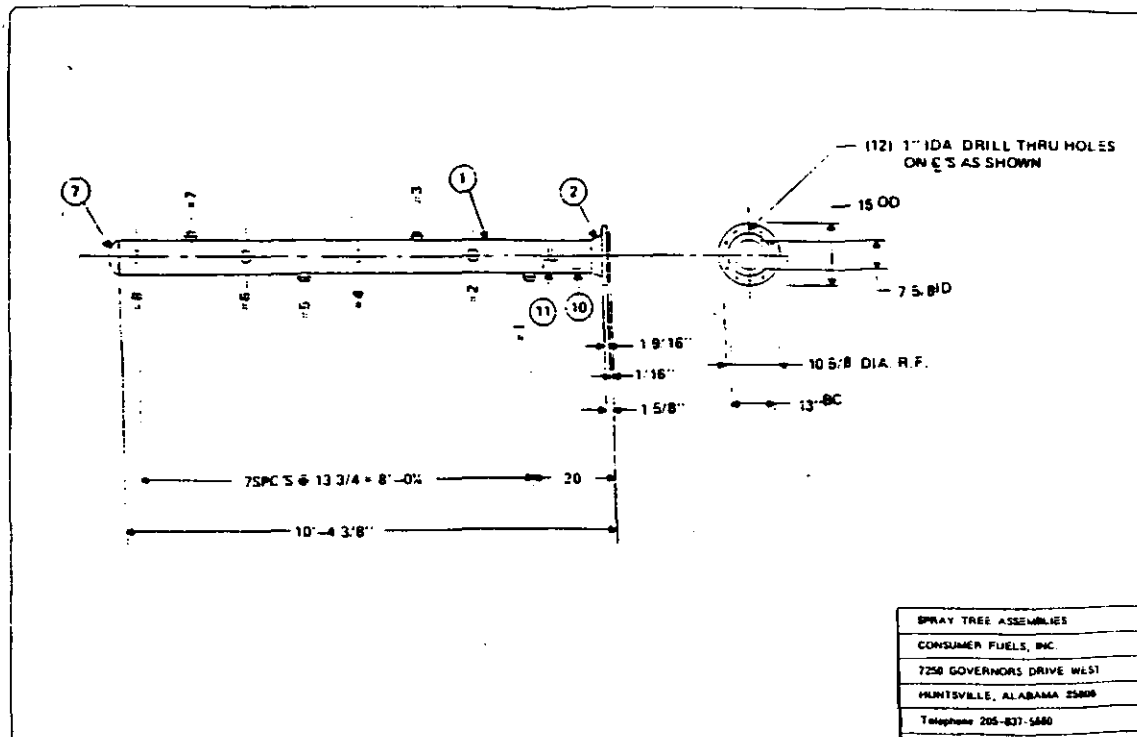
C-861

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response



SPRAY TREE ASSEMBLIES
CONSUMER FUELS, INC.
7250 GOVERNORS DRIVE WEST
HUNTSVILLE, ALABAMA 25800
Telephone 205-837-5880
Page / of 3 pages

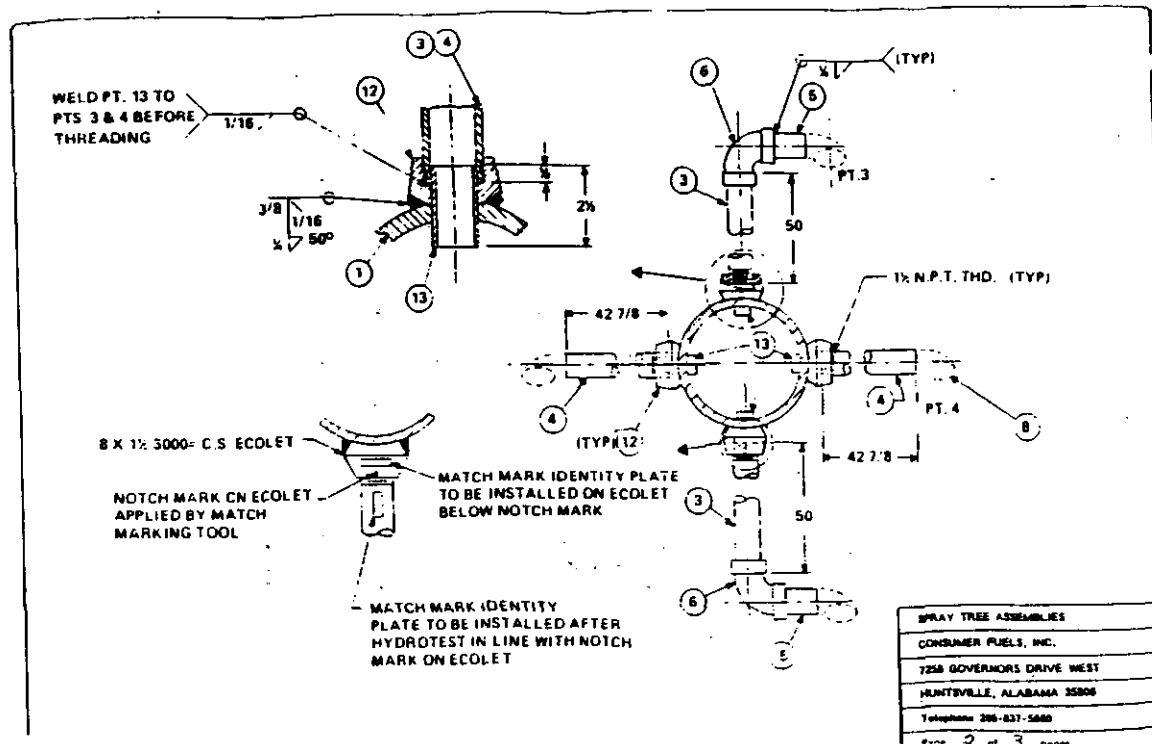
C-862

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response



C-863

Table C-8. Public Comments and DOE Responses

Response

[illegible][illegible]

- NOTES
- 1 ALL SPECIFICATIONS AND CODE REFERENCES SHALL REFER TO THE LATEST EDITIONS AND ADDENDUM IN EFFECT ON CONTRACT DATE
- 2 ALL TRADES SHALL BE TAPED PIPE TRADES AND SHALL BE COMING TO THE CONTRACTOR
- 3 ASSEMBLY SHALL CONFORM TO THE REQUIREMENTS OF ASME BOLDEN AND PRESSURE VESSEL CODE SECTION III DIVISION FOR CLASS 2 COMPONENTS, AND SHALL BE STAMPED ACCORDINGLY
- 4 PURCHASER SHALL SUPPLY NOZZLES AND TRAPPING, LABELS TO BE INSTALLED BY CONTRACTOR
- 5 HEATING, LIGHTING AND INSTRUMENTS SHALL BE LOCATED AND CENTERED BELOW THE FIRST ARM AS SHOWN DANGER, DO NOT CLIMB ON OR USE ANY PART OF THIS STRUCTURE TO SUPPORT EQUIPMENT OR PERSONNEL
- 6 ALL WELDING OTHER THAN SOCKET WELDS MUST BE FINISH PERMITS
- 7 TOLERANCES ON LINE AND DIMENSIONS SHALL BE - .2"
- 8 APPROXIMATE WEIGHT OF ASSEMBLY IS 9 LBS
- 9 EACH ASSEMBLY MUST COMPLY WITH THE FOLLOWING: 1. THE FIRST ARMED 2. JOINT NUMBER 3. 3-1
- 10 PRESSURE, 1. TIMES IN FIELD LOCATED OR IN PROPER FITTING BY COMPARING ASSEMBLY PLATES WITH ASME BOLDEN AND COMPLETE
- 11 PERMITS AS PER ASME DIVISION 2-7

SPRAY TREE ASSEMBLIES
CONSUMER FUELS, INC.
7250 GOVERNORS DRIVE WEST
HUNTSVILLE, ALABAMA 35890
Telephone 206-837-5800
Page 3 of 3 pages

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response

- 5 TOLERANCE ON LINEAR DIMS IS TO BE ± 0.1
- 4 ASSEMBLY TO CONFORM TO ASME SECTION
- 3 DIVISION I SUBSECTION 3 CLASS III
- 2 TOLERANCE ON ANGLES TO BE ± 0.1°
- 1 ALL PIPE IS IN 2010 1/2" O.D. LENGTHS EXCEPT
- WHERE INDICATED OTHERWISE
- 1 DIMENSIONS ARE SYMMETRICAL ABOUT C
- OF SPRAY HEADER SYSTEM

NOTES:

SCALE 1/2" = 1' 0"					
		SPRAY TREE ASSEMBLY AND POND			
		Consumer Fuels Corporation			
		7250 Governors Drive			
		Huntsville, Alabama 35805			
		(205) 837-5660			

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
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CHARCOAL OFF-GAS ABSORBER TANKS

OFFERED BY

CONSUMER FUELS, INC.
7250 Governors Drive West
Huntsville, Alabama 35806

205-837-5660

C-866

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	CONSUMER FUELS, INC., OFFERS FOR SALE: 20 EACH CHARCOAL OFF-GAS ABSORBER TANKS. These tanks were designed to hold activated and specially treated charcoal (TEDA or other treated). The radioactive fission product gases from the nuclear power reaction, such as xenon, krypton, iodine, etc., are adsorbed and held for extended periods of time. This extended time period permits their decay. The remaining effluent gases from the adsorber are released to the environment through a vent and absolute filters. Particulate daughters of these radioisotopes are held in the charcoal beds and on the absolute filters. 205-837-5660	

C-866

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
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DESIGN DATA

CHARCOAL OFF-GAS ABSORBER TANKS

A Vertical Tank with Integral Legs:

Length	23' 8"
Diameter	4' 0"
Weight (empty)	8,644 pounds
Weight (loaded)	24,121 pounds
Capacity	1,857 gallons
Wall thickness	5/8"
Material	CS A516-70
Design temperature	to -50°
Design pressure	350 psi W.P.
Code Class	U - "N" Stamped
Full 100% X-Ray Inspected	
Six Integral Nozzles:	
2 ea. Inlet and Outlet - 4" dia.	
1 ea. Carbon load and unload - 6" dia.	
3 ea. Thermocouple - 2" dia.	
Plus hydrotest port.	

We have available twenty (20) of these
Charcoal Off-Gas Absorber Tanks

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
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HYDROGEN RECOMBINATION
VESSELS

OFFERED BY

CONSUMER FUELS, INC.
7250 Governors Drive West
Huntsville, Alabama 35806

205-837-5660

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
GENERAL HYDROGEN RECOMBINATION REQUIREMENTS		
	A nuclear reactor may produce hydrogen-oxygen mixtures either: (1) In normal process - usually small volumes - OR (2) In nuclear accident conditions, particularly during a Loss of Cooling Accident (LOCA) - usually large volumes	
	Such hydrogen-oxygen mixtures pose explosive hazards to the reactor and must be recombined safely.	
	There are two major methods in current use which can provide for safe recombination of nuclear-produced hydrogen-oxygen mixtures:	
	(1) Catalytic Recombination and (2) Thermal Recombination	
	The Catalytic Recombiner consists of a pressure vessel containing a catalyst cartridge. The Catalytic Recombiner promotes the chemical re-combination of hydrogen and oxygen, producing harmless water in the off-gas stream of the nuclear power plant.	
	The Thermal Recombiner consists of two specially designed sequential heating chambers. The first chamber initially heats the mixture to a temperature above the threshold for thermal recombination. The second reaction chamber is set up to be sensitive to the first chamber in both gas mixture and temperature. The second chamber controls and completes the recombination of hydrogen and oxygen.	
	The result is safe recombination through use of the thermal process.	
	CONSUMER FUELS, INC., has and offers for sale both the Catalytic and the Thermal types of recombiners.	
	The Rockwell Corporation Atomic International Division Thermal Hydrogen Recombiner was the type used at Three Mile Island to bring that reaction under safe control.	

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response

HYDROGEN RECOMBINATION CATALYST VESSEL

This Catalytic Recombiner consists of a pressure vessel containing a catalyst cartridge. The Catalytic Recombiner promotes the chemical re-combination of hydrogen and oxygen, producing harmless water in the off-gas stream of the nuclear power plant. This produces a process volume reduction and limits downstream hydrogen content for safety purposes.

This hydrogen is produced in small volumes during the normal process. However, in the event of a fuel-thermal accident, much higher and more dangerous levels of hydrogen may be produced. Thus this hydrogen catalytic process eliminates the hydrogen detonation and/or flashback potential during a reactor thermal accident.

Note: Operation is continuous and remote. Access during operation will not be possible due to radioactivity, but will be possible during plant shutdown.

The complete Hydrogen Catalytic Recombiner consists of a pressure vessel plus removable recombinder catalyst cartridge.

CONSUMER FUELS, INC.

HAS FOR SALE

TWO (2) EA. COMPLETE CATALYST RECOMBINERS PLUS

TWO (2) EA. SPARE CATALYSTS

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
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**DATA
CATALYTIC HYDROGEN RECOMBINER**

RECOMBINER VESSEL:

Height	7' 6"
Diameter	4' 9"
Working Pressure	350 psi @ 900° F.
Working Temperature	900° F.
Vessel weight	8000 pounds

Vessel has five welded nozzles:

Inlet and Outlet nozzles (Φ)	16" diameter
3 ea. temperature (TC)	1" diameter

Manufacturer:	Process Equipment Co., Inc.
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CARTRIDGE CATALYST:

Sized to fit the above vessel	
Catalyst installed in a stainless steel basket	
Catalyst cartridge weight	1,512 pounds

Total weight of vessel plus cartridge	9,512 pounds
Manufacturer:	Catalytic Products International Rolling Meadows, IL

**CONSUMER FUELS, INC., HAS AND OFFERS FOR SALE
2 EA. COMPLETE RECOMBINERS (VESSEL PLUS INSTALLED CARTRIDGE)
AND HAS ADDITIONALLY TWO (2) EA. SPARE CATALYST CARTRIDGES**

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
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**DATA
THERMAL HYDROGEN RECOMBINER VESSELS**

Recombiner Vessel:

Consists of an integrated baseplate with all necessary components	113" L x 65"W x 95" OAH
Weight	8,110 lbs.
Design Working Pressure	10 psi @ 1410° F.
Pneumatic Test Pressure	75 psig
Design Working Temperature	1410° F.
Power Requirements	48 KW, 480 V, 3 Ø
Manufacturer:	Atomics International Division Rockwell Corporation

Note: A Thermal Recombiner of this same type, manufactured by the Atomics International Division of Rockwell, was plumbed into the reactor vessel during the Three Mile Island accident. Its subsequent operation reduced the large amounts of hydrogen within the reactor to water, and allowed safe control of the runaway reactor to be regained. Therefore, this recombinder is the only model with an operationally proven history in handling a LOCA type nuclear accident.

ASME Code III - N - 2
Code case 1481-1.1592-9.1662.1644-5 (Nuclear)

**CONSUMER FUELS HAS AND OFFERS FOR SALE
FOUR (4) EA.THERMAL HYDROGEN RECOMBINER VESSELS**

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response

HYDROMATION RADWASTE FILTERS

OFFERED BY

**CONSUMER FUELS, INC.
7250 GOVERNORS DRIVE WEST
HUNTSVILLE, ALABAMA 35806**

205-837-5660

C-874

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
HYDROMATION NUCLEAR RADWASTE FILTER MODEL NO. HN-4016		
	This diatomaceous earth filter assembly, manufactured by Hydromation, Inc., was designed as an integral part of a boiling water reactor radioactive waste processing system. The filter is a flat bed filter comprised of upper and lower shells containing a filter media endless belt.	
	The media belt is of fine mesh dacron. Pneumatic lift bags are designed to unseal the shells and lift the upper shell for discharge and recharge cycles.	
	The filter media is diatomaceous earth. It is placed on the media belt by a pre-coat operation. The media absorbs the fine radwaste particles and allows only the clean liquid to pass through the individual diatoms of the filter cake. Internal pressure builds as the filter is used. At a predetermined pressure, filtration stops, and the filter automatically indexes through its cycle to resume operation.	
	Some additional auxiliary equipment is necessary to put this filter into operation. This auxiliary equipment can be identified by the intended final use of the filter, but might include the precoat tank, the precoat pump, the precoat feeder, and other small auxiliary valves and switches.	
	Certain nuclear operations might also need to specify a dust evacuator to remove and handle the expended filter cake.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
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**DATA
HYDROMATION RADWASTE FILTER**

Model No.	4016
Type	Flat Bed 20' L x 9' H x 5'4" W
Construction	Stainless Steel lined shells Stainless Steel roller drive chains
Filter Media	Replaceable Diatomaceous Earth
Filtration Area	54 square feet
Filter Cycles	Automatic
Filter Media Support	Two-piece Fine Mesh Endless Dacron Belt
Weight of Filter	20,000 pounds
Flow Rate	220 gpm
Filtration Quality	Removes particles down to 0.5 - 1.0 micron size level

**CONSUMER FUELS HAS AND OFFERS FOR SALE
TWO (2) MODEL 4016 HYDROMATION RADWASTE FILTERS**

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
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SEALING AIR COMPRESSORS

OFFERED BY

CONSUMER FUELS, INC.
7250 Governors Drive West
Huntsville, Alabama 35806

205-837-5660

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
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**DATA
SEALING AIR COMPRESSORS**

NUCLEAR GRADE OIL FREE, CLASS 2, SEISMIC I	ASME DESIGN
Capacity	70.8 SCFM
Inlet Pressure (abs.)	14.7 psia
Inlet Temperature	1° F
Discharge Pressure	134.7 psia
Rated Speed	3575 RPM
Drive Motor	50 HP
Electric Power	Reliance Motor of the Nuclear Service Type 460/230 V. 60 cy. SF/D

These Sealing Air Compressors produce Breathing Grade E quality air. The compressor head compresses air with a centrifugally driven pure water ring, and therefore the air is uncontaminated by the compressor.

These machines were originally manufactured as a nuclear process leakage control compressor. They were used to guarantee zero leakage from certain nuclear processes involved in a nuclear power plant during any nuclear accident. They were utilized roughly as shown by Diagram No. 1 attached.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
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These machines are brand new. They are complete with compressor head, output air loop, water separators, coolers, heat exchanger, pressure gauges, valves, motor, motor controls, etc. They have been in inside ANSI Class B storage for nuclear grade material since purchased.

These machines are available for inspection and immediate shipment.

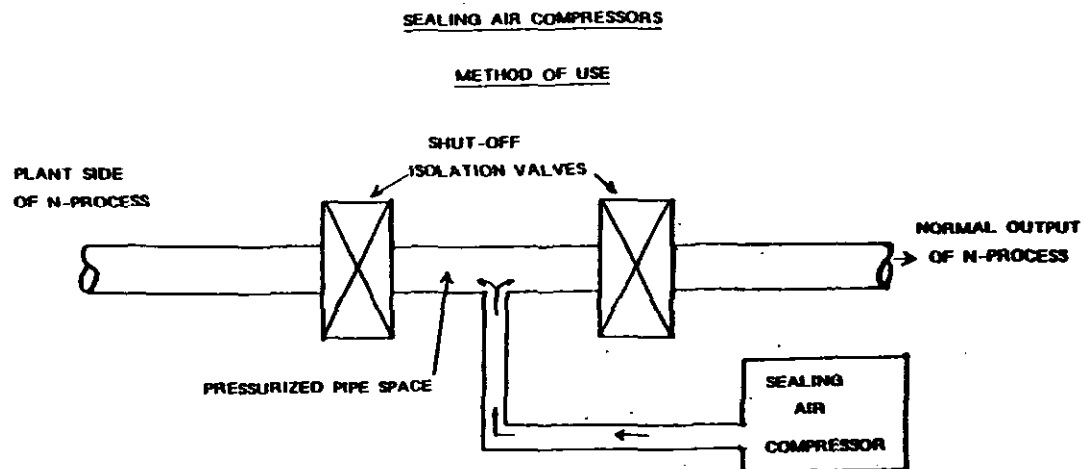
CONSUMER FUELS, INC., HAS AND OFFERS FOR SALE
TWO EA. SEALING AIR COMPRESSORS, COMPLETE ASSEMBLIES,
PLUS ONE EA. SPARE COMPRESSOR HEAD

C-879

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
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DIAGRAM NO. 1



During an accident in a nuclear process, it may become desirable or necessary to seal off a pressurized pipe penetration. Normal sealing of such a pipe for non-nuclear processes is typically shutting off a single isolation valve installed in the pipe. For more critical positive sealing of a nuclear process pipe penetration, two isolation valves provide the safer shutoff. In addition, to further control and prevent any leakage, the space between the shutoff valves is pressurized by air (Compressed Air Association Grade E) from the sealing air compressor as shown in the above simplified diagram.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-27	STATEMENT OF SAM SCHILLACI	
	MR. SCHILLACI: Good morning. Thank you for letting me speak. My name is Sam Schillaci, and I represent myself. I've been a resident of Aiken for about 10 years. I would just like to state some views, if anybody has a chance to look at the views. Okay. I'd like to state some views. Everybody's had a chance to state their views. The world's tropical forest are 50 percent of the world, and that's on the first page of my statement. We have a number of problems; the environment is one of them. And I would like to see DOE address some of the more global problems that we have today, such as global warming and tropical forests. The DOE is a multidisciplinary department; it was originally charged with the long-term progress, research and development of energy technology, the marketing of Federal power, energy conservation and the nuclear weapons program, energy regulatory programs, and the upkeep of the Federal energy database. Now, I understand that part of their mission is nuclear care, but with 22,000 employees, you could possibly reach into some of the other areas of the entire Department of Energy scope. I am not against the weapons program; we need a defense, but I'm not technical enough to address that issue. But I'm just wondering why three reactors instead of two.	As described in Section 2.2 of the EIS, DOE has considered the alternative of shutting down one or two of the three reactors. DOE has determined that the production capacity of two SRS reactors is insufficient to meet the current projected requirements for nuclear materials as established by the NWSM and discussed in Section 1.2 of the EIS. In addition, a potential reduced-need scenario was evaluated and is considered in this EIS.
A-27-01		

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-27-02	I'd always hoped that the Department of Energy would take a larger role in national energy conservation, alternate fuels and advanced transportation, especially in the coming years.	DOE has several programs that deal with the research and development of alternative energy resources. The subject of this EIS, however, is the continued operation of nuclear material production reactors, which are not linked at all to the development of energy resources.
A-27-03	And lastly, I might ask that you have a local office. And I see in the paper that DOE does have a local office now, but it is for emergency preparedness. That in itself is kind of scary if you live in town. I would like to see it staffed, and not really specialized in emergency preparedness, as a focal point for people interested in Department of Energy matters.	The DOE Office of External Affairs is a focal point for public inquiries on DOE matters. The public can contact Mr. J. M. Gaver, Director, Office of External Affairs, Savannah River Operations Office, P.O. Box A, Aiken, South Carolina 29802.
	And I think that the Department should become more viable and visible in this area, and more responsive to our issues of the day. Thank you.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-28	STATEMENT OF MR. PHILIP H. PERMAR	
	40 years ago this summer in Wilm—Physicists—Engineers—Metallurgists—Physical Chemists. Never dreamed our work would come to this! for 38 years in Aiken, been provided the results In favor of <u>making some neutrons</u> at SRS call it <u>restart</u> or <u>continued operation</u> or whatever 1. Not our job to second guess DOD or T requirements. If they want it, they should get it. Its their job to understand Mr. Gorbachev. 2. Savannah River Reactors are in <u>no way</u> similar to Chernoble in design or construction. Our reactors are inherently safe. No risk of serious accidents. In fact, 2 have been shut down without any disastrous events. Suggest that the EIS consider these shut-downs in predicting the course of possible future shut-downs. 3. Handling of reactor wastes is under control. DWPF will process waste safely and successfully and a long-term disposal site can be made available at the DOE weapons proving grounds. In conclusion, let's allow get Westinghouse to off dead center and go! Thanks for this opportunity— I don't know if I am in favor of continued operation or Im really in favor of getting off dead center and making a few neut—Based on my own personal experience with the design, construction and the operating history of the reactors Background - Began in summer of 1950 in design liaison group in Wilmington - Research Manager of Nuclear Materials - Developer of market for 252cf - Waste Management Planning 1. If Dept of Defense needs Tritium, they should get it. <u>Not our</u> task to comment on these needs. Go talk to DOD!!	Section 4.1.3 of the EIS discusses potential accident consequences.
A-28-01		

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
2.	Savannah River Reactors are in <u>no way</u> Similar to Chernoble in design or materials We risk <u>no</u> serious nuclear accident.	
3.	Started with 5 stainless steel reactors - 2 shut down without any disastorous events.	
	Suggest if you want to forecast consequences of possible future failures, look to the details of past failures -	
4.	Handling of reactor wastes now under control.	
	Defense Waste Process Facility Final burial at Nevada test site is prudent and reasonable.	
	In conclusion lets stop arguing and let Westinghouse get the show on the road!	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-29	STATEMENT OF JOHN BEARD	
A-29-01	DR. BEARD: I'm John Beard. I represent myself. I did work at the DuPont Savannah River Plant for 22 years. I need approximately two minutes of your time, if you can afford that amount. There are times when we need to face reality. There's no doubt that we need radioactive elements for weapons, energy and medicine. By being fortunate enough to split the atom, this great country of ours has kept at bay potential aggressors since World War II, so that America is synonymous with freedom and with opportunity. Post-World War II America was the only country in the world that deterred the Communists from taking over the free world. The Cold War isn't over yet. Admittedly, the world situation is better, but we need to have a difference on our side. It was George Washington who said, "Eternal vigilance is the price of liberty." Our sources of energy are dwindling. Some forms of energy, especially coal, cause pollution which cannot adequately be controlled. It is obvious that we are now dependent on radioactive materials for energy. To keep this country great, I am unreservedly in favor of the start of the reactors at the Savannah River Site. Thank you very much.	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-30	STATEMENT OF VERNON MUNDY RT. 3, BOX 431-S AIKEN, SC 29801 VERNON MUNDY PHONE 803-593-2232 (LEAVE MESSAGE) REPRESENT: BODY OF CHRIST & SELF	
A-30-01	I'm Vernon Mundy, and I'm a Christian. So, I'm going to try to represent the body of Christ and also ourselves, as divergent as that may be sometimes. I was born and raised in this county, and I've lived the last 14 years in Florida, and I've been visiting here for the past few months. I live with my brother and work in Aiken. I feel fortunate to be able to be part of this procedure, and it has been very interesting to hear the versus sides, especially the two scientists who spoke on opposing sides, one of whom had worked for the Department of Energy at several places. I'd like to say a little bit about what God says about our jobs here. In Genesis I, God said, "Let us make man in our image, after our likeness, and let him have dominion over the fish of the sea, the fowl of the air, and of the cattle and all of creatures upon the earth." So, He did that, and to bless us with the charge of doing those things that I just read. He said that they were to produce food for us. "And God saw everything that he had made, and knew that it was very good." There is one thing to say about this and the Bible; Jesus talks about our stewardship. And the way I look at it, he said that you take what God has given you, and you take care of it and make it better. And when you judge that stewardship at the end of your life, you have something to show. Not a waste of time, not something less, not a different thing, but a fruitful venture. How so many times has there been judgment, as with Noah. And even to the last day, people will be doing just like they did before the time of Noah, eating and drinking, they're in a given marriage, by themselves, building normal, everyday human things. And it's very easy when you're doing all these things and involved in all these things, to forget the words of warning and to ignore them, to have the same mentality.	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	And I hope that people aren't doing that here. A lot of people have spoken about families with children who live and work here and have businesses, but, if and when they want to have some truth, they literally did not forecast Chernobyl. When Chernobyl hit the fan, so to speak, a lot of those people refused to leave.	
A-30-02	I'm opposed to the plant operation because, as a scientist so stated here, we have 3 to 10 years' worth of tritium; we still have literally years of work to clean up the waste, million and billions of dollars to spend. All the leaks have not been reported to the public that allow those people to go on complacently. The one scientist stated a possible 5,000 cancers with a major leak, and then, possibly a factor of 10 to 100 more than that. Nobody can afford that.	Please see the responses to Comments A-06-01 on the need for tritium and other nuclear materials and A-09-02 on waste management and environmental restoration.
A-30-03	We have responsibility. The Government, the DOE — they have to do what they're told to do. And we admit that it's our responsibility to oversee that and be sure that the judgment is done right. And I'd like to see them give more consideration. And I pray to God that we are heard in this proceeding. Thank you.	Section 4.1.6 of the EIS addresses the potential additional risk to human health resulting from the continued operation of K-, L-, and P- Reactors. The health effects of past operations have been (and are being) evaluated by independent agencies, as described in Appendix B; no significant health impacts on the general public have been identified. Section 3.7 (Tables 3-13 and 3-14) and annual environmental monitoring reports issued by DOE describe the extent of contamination from prior SRS operations. Section 4.1 presents projected environmental impacts from continued reactor operation.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-31	STATEMENT OF PAUL MILNER	
	My name is Paul Milner, I am a physician and Professor at the Medical College of Georgia, and I am representing the Augusta Chapter of Physicians for Social Responsibility. When the Natural Resources Defense Council team visited the KYSHTYM nuclear weapons complex in the Ural Mountains of the Soviet Union - a facility so secret that it had never appeared on Soviet maps - an old retired worker said: "I am seventy-five years old and I've worked almost my entire life building nuclear weapons. I'm just glad I've lived long enough to see Americans come here, <u>because now maybe we can put an end to this senseless arms race.</u>" But not at the SRS. You will notice that Appendix A to the EIS draft "Need for this material" is left blank. The information is classified, not so much to keep it from the Soviet Union, who know all about it, but to prevent the citizens of the United States from causing political problems for the DOE.	
A-31-01	In the light of the recent changes in the political direction of the Soviet Union and their Eastern European allies, the most democratic and sensible proposed action in the EIS is ALTERNATIVE - 3, - Terminate operation of K-, L- and P-Reactors in the immediate future and maintain them in cold standby. Let us await the outcome of arms negotiations and the political changes now rapidly occurring. President Gorbachev said, at Stanford University the other day, that we should work together for a world without war. Why not take him on on that? He is committed to non-production of nuclear weapons and a comprehensive test ban treaty any time we are ready to agree. We could put our resources to saving the planet from the depredations of our industrial excesses and lack of foresight of the consequences of unregulated nuclear weapons facilities. The clean-up of the weapons complexes will cost, according to the government, in excess of \$100 billion over 10 years - more than it cost to put a man on the moon. Most of that will be spent on employing personnel. The EIS says that shutting down the reactors indefinitely would cause the loss of over 5,000 jobs. I suppose we	Please see the response to Comment A-06-07 on the changing world geopolitical situation.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-31-02	should all continue to smoke tobacco, drink alcohol, and stuff ourselves with high cholesterol food because otherwise jobs would be lost! Jobs are being lost in industry all the time, but the nuclear weapons plants will need jobs for years to clean up the mess and make them safe for future generations.	Please see the response to Comment A-09-02 on waste management and environmental restoration.
A-31-03	In Table 4-15, the EIS lists the potentially dangerous incidents that have occurred at the SRS since 1960, (presumably there are no records before that date). From 1971 through 1987 there were 53 reactor shutdowns because of problems. In August 1988, at an attempted start-up of P-Reactor, a Chernobyl-like situation could have occurred had the reactor not been shut down. The EIS tries to downplay this incident by saying it posed no threat to the public.	Because the nuclear and physical-chemical characteristics of the SRS reactors are fundamentally different from those of the Chernobyl reactors, a similar accident at SRS reactors is physically impossible.
A-31-04	There is much discussion about the theoretical probability of a serious accident, but no evacuation plan for the population of the area should an accident occur. The Chernobyl accident has produced devastating effects over a very wide area. Whole towns are uninhabitable. The leukemia rate in children is now four times the expected incidence. Thousands of square miles of northern Europe are contaminated, and the reindeer, the staple food of the Laplanders, cannot be eaten because they have fed on radioactive plants. The ultimate death toll from cancers is unknown. Oh, it can't happen here. These are famous last words. The K-, L-, and P-Reactors are over 35 years old. They are shut down because they are not safe. Let us keep them shut down indefinitely and get on with making South Carolina a better place to live. *I am not alone in having this opinion. Fifty-four prominent citizens, including two former CIA Directors, William Colby and Stansfield Turner, former Secretary of State Cyrus R. Vance, former Defense Secretary Robert S. McNamara, have sent a letter to President Bush asking that the reactors at SRS not be restarted. I quote from this letter: "Surely this unrelenting race to produce yet more ingredients for nuclear weapons deserves serious re-examination in light of the progress being made to end the nuclear arms race". This letter also went to President Gorbachev, who has announced a time table for shutting down production by the year 2000.	Section 3.9 of the EIS discusses emergency preparedness.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-32	STATEMENT OF A. K. HASAN	
A-32-01	MR. HASAN: Thank you. My name is A. K. Hasan. I am lifelong resident of Augusta, Richmond County. I am a former member and president of the Richmond County Board of Education, and a former member of the City Council of Augusta. I am here today as a husband, father, a concerned citizen, but also to represent — I am Vice President of the Carolina Friends of the Savannah River Site, and I am an official representative today on behalf of the City Council of Augusta and the Richmond County Board of Commissioners. And in representing different organizations that share the same viewpoint, which is to endorse the restart of the reactors at the Savannah River Site, in keeping with the schedule that has been set forth by the Department of Energy and Westinghouse Savannah River Company. First of all, I would like to mention that nuclear weapons are reality; they are something that we have come to live with for some time. Nuclear weapons have contributed to a strong defense posture for America in the world; they have afforded us the opportunity to become peace advocates and advocates of freedom, particularly in areas such as Eastern Europe. I do not believe that we would have the success of the Berlin Wall coming down had we not had the presence of nuclear weapons and a strong defense posture on behalf of America and the voice of America to speak to those concerns. We must also be aware of the fact that the Savannah River Site is the only site under the supervision of the Department of Energy that produces tritium, which is needed for the production and the replenishing of nuclear weapons and, as we alluded to, for the purpose of establishing a strong defense. So, we must be realistic, we must work to keep our defense intact, and we must remain a strong voice in the world on behalf of peace and freedom. As a local resident and as a member of the Georgia-Carolina Friends of the Savannah River Site, I am personally concerned and the group is concerned with the plant's safety. We are pleased to have had the opportunity to study the Environmental Impact Statement released by the Department of Energy. And as the study points out, because of the procedures, the implementation of new technologies, the restart of the reactors certainly will contribute some	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	additional contamination to the overall environment. However, it is very minimal in the sense that it will be less than one millirem of new additional contamination to the overall environment. To put that in perspective, a person who takes an X-ray receives some 39 millirem of radiation exposure by virtue of getting an X-ray. When the restart of the reactors is put in force, only less than one millirem of new contamination will be in the environment. Also, on the local level, have some 22,000 people currently employed at the Site; it contributes heavily to our overall economic community's viability and the health of the economic situation in our community. Westinghouse's coming in has contributed some two million dollars to local colleges and universities to help train and educate young people so that they will be prepared to perhaps become engineers at the Site. More importantly, Westinghouse has allocated some \$100 million toward training, retraining, educating and reeducating current employees at the Site, with some \$50 million going toward remediation. The purpose for the remediation is because when a young person in America graduates from the high school, the national standard is that that person can go on as a graduate with a reading capacity on an eight grade level. Westinghouse, because of its strict procedures and its redundant methods of operation, needs those individuals who can read at least on an 11th grade level, so, they are putting a lot of money, in terms of remediation, to train and retrain employees. And finally, I would like to say that with disposal of waste being one of the major issues in our world today, this plant's operation and existence afford us the opportunity to have a company such as Westinghouse to consistently work to develop new methods of disposing waste, in addition to developing additional technologies. So, we need to have our reactors restarted, and we certainly support this wholeheartedly. Thank you.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-33	STATEMENT OF KIP CAMPBELL	
A-33-01	MR. CAMPBELL: Thank you. My name is Kip Campbell. I do work for Greenpeace. I am not representing that organization today; somebody else is going to do that. I've been thinking for several days about what I was going to say when I got here because I wanted to say something that hadn't already been said or that wasn't going to be covered. A lot of people at this hearing today have already been at other hearings. I thought about all kinds of things that I could say, like, that if there was ever a time to pause and see what, you know, course peace might take, it's now — these kinds of things. But I really think that other people are going to talk about that. And we heard about redundancy today. So, I thought that I would talk about something — we've also heard so many facts and figures today — I will try to stay away from facts and figures. One of my favorite Americans was always Mark Twain, who had a very low opinion of statistics. And in the time I've worked for Greenpeace, that's something that I've learned. I've seen statistics twisted and used to all kinds of things; you know, the same figures used to prove many things. We're living in a very changing time right now. It must be very difficult for you, here in Aiken, to be watching the course that the peace accords are taking because on one hand, if you're hoping that they success, you're also looking at situation that may create a great deal of economic hardship for yourselves and for your town. Even with other nations like Iraq or China having nuclear weapons, if the accord succeeds, we're definitely going to cut the amount of weapons that we have. And this is going to create a stockpile of materials that you produce here in Aiken at SRS, as it's called now. I've heard people say today that every person who lives here in Aiken is in favor of the restart of SRP. I can probably say that every person who works for Greenpeace is opposed to the restart of SRP. That doesn't really matter when you live in Aiken; it doesn't really matter what we think at Greenpeace. We're not the people who are paying for this facility. The people who are paying for this	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	facility are the American taxpayers, and they're being told by their President, by people like Margaret Thatcher, they're hearing it from the Soviet premiers — they're hearing all these people say that the Cold War is over.	
	The Cold War may not be over, but that also doesn't really matter. What matters is whether or not the people who pay the bills for this facility believe that the Cold War is over. And with people like the President telling them that it is, there's a good chance that that's what they believe, especially since they probably want to believe that.	
	You may see SRP be restarted in December. You may even see work begin on the New Production Reactor. I think that all of these are very temporary situations, that the American people are tired of paying the Cold War. And if they think that it is over, the first question that they are going to ask their leaders is, "Why are we still paying to build bombs if the Cold War is over?" This is a free market economy; they don't buy products that they don't need anywhere, and there's not a whole lot of need for bombs if there's not a war.	
	If the production of bomb ends — and it's going to end; it may not end this year, it may not end next year, but it's going to end soon, unless there is a dramatic reversal of what's happening in the world today. And very few people — even people like the CIA — don't want to believe that that's going to happen.	
	I think that what you need to do here in Aiken is that you need to start planning for a future where, in order to support your economy, you have to do something besides build bombs. That might not happen this year or next year, but it's going to happen soon, and it's going to take you a long time to shift your economy from building weapons to building something else, something that people want to buy five years from now.	
	That's what I wanted to say. Thank you, and take care.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-34	STATEMENT OF ADAM O. GOLDSTEIN, M.D. COMMENTS ON DRAFT ENVIRONMENTAL IMPACT STATEMENT ON THE CONTINUED OPERATION OF THE K,L, AND P REACTORS SAVANNAH RIVER SITE AIKEN, SOUTH CAROLINA JUNE 8, 1990 BY: ADAM O. GOLDSTEIN, M.D., PRESIDENT PHYSICIAN'S FOR SOCIAL RESPONSIBILITY AUGUSTA, GEORGIA Good morning, My name is Adam Goldstein, and I am the current President of the Augusta Chapter of Physician's for Social Responsibility., or PSR. I want to express my thanks for the opportunity to speak before you at this time. My comments this morning are directed to the following four specific problems with the current Draft EIS: 1. The Draft EIS fails to adequately address the ramifications of International developments in arms control negotiations. 2. The Draft EIS seriously fails to discuss and may potentially underestimate significant medical concerns. 3. Emergency accident and management plans are inadequate. 4. The Draft EIS fails to adequately address the costs of continued operation of the reactors vs. placing them on cold standby or decommissioning. I will briefly discuss each point. <u>1. The Draft EIS fails to adequately address the ramifications of International developments in arms control negotiations.</u>	Please see the response to Comment A-06-01 on the need for tritium.
A-34-01	The need for reactor operation is stated to be the need to meet the need for tritium production as updated in the Nuclear Weapons	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	Stockpile Memorandum, which is classified. This "classified material," written and approved over 16 months ago, is already outdated, as evidenced by the events below. The Energy Department has recently stated that it is preparing two comprehensive studies on the public health and environmental consequences of its program to clean up and modernize atomic weapons' plants, to explore in public how many weapons' plants the United States needs, to produce radioactive materials for bombs. James Watkins, the Secretary of Energy, stated that these studies will "serve as useful planning tools to allow DOE and the public to assess the system wide impacts of broad policy alternatives before irrevocable commitments of resources are made." On May 24, 54 prominent Americans, including one former Secretary of State, one former Defense Secretary, and two former CIA Directors, sent a letter to President Bush endorsing and encouraging a reexamination of and a halting to further production of nuclear weapon's materials. Within the last week, it has been Internationally reported that Presidents' Bush and Gorbachev signed unprecedented agreements to reduce long-range nuclear missiles. This statement directly contradicts statements in the Draft EIS that "requirements in the near term will not change significantly", and which statement the entire Draft EIS analysis is based. The Draft EIS should therefore address:	
A-34-02	*How does present and future arms control negotiations and warming relationships with the Soviet Union affect the need to produce plutonium and tritium for nuclear warheads? *What effect does the recent arms treaty have on restart operations vs other alternatives? *Should any proposed restart occur before a programmatic EIS is performed to prevent 'irrevocable commitments of resources'?	Please see the response to Comment A-06-07 on the changing world geopolitical situation.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	<u>2. The Draft EIS seriously fails to discuss and may potentially underestimate significant medical concerns.</u>	
A-34-03	The Draft EIS purpose is stated to be to further the purposes of NAPA by providing the public with updated information on the environmental impacts of the continued operation of K,L, and P reactors; yet, the proposed "no action" alternative of continued operations is flawed since the current reactors are <u>not</u> operational.	Please see the responses to Comments A-07-02 and A-08-01 on continued operation.
A-34-04	While this Draft EIS was prepared by 30 individuals, there is not a single physician among the group and only four individuals with Doctorate level education. It is not surprising therefore, that discussions of radiation induced health effects that "could" occur as a result of reactor restart totally ignore the cumulative health effects and evaluations of workers and surrounding populations from over 35 years of reactor operations.	Section 3.7 of the EIS presents estimates of cumulative exposures to the public from prior SRS operations.
A-34-05	The adequacy of current medical monitoring systems, exposure modeling techniques and standards to evaluate the long term health of workers and surrounding populations for future operations must be reassessed in light of recent scientific findings on the health effects and risks of exposure to low level ionizing radiation.	Appendix B (Section B.1.5) discusses previous and current epidemiological studies of SRS workers and the neighboring populations. Also, please see the response to Comment A-17-02 on recent health risk estimates and their use in this EIS.
A-34-06	The Draft EIS should therefore address the need for <u>independent</u> analysis of all prior exposure levels and their health effects on all workers who have worked in K,L, or P reactors as well as nearby communities since operations first began. The Draft EIS should also answer the following questions:	Please see the responses to Comment A-34-04 and A-34-05 on exposure levels and health risks.
A-34-07	*How much radioactive and hazardous materials have gotten into the environment during prior reactor operations, and what effect will this contamination have on the health of workers for future cleanup efforts.	Please see the response to Comment A-34-04 on exposure and health risks, and the EIS on <u>Waste Management Activities for Groundwater Protection, Savannah River Plant</u> (DOE/EIS-0120).
A-34-08	*Since the reactors were built in 1954 and there are plans for eventual decommissioning, what is the expected lifespan for the reactors under different production alternatives and the effects on safety calculations for worker health?	As noted in Section 2.1.2.3.2 of the EIS (and unlike N-Reactor at Hanford), DOE has identified no life-limiting mechanisms for the SRS reactors, regardless of the production alternatives adopted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	<u>3. Emergency accident and management plans are inadequate.</u>	
	The Draft EIS states the SRS has enjoyed over 100 plus reactor years of reliable operation. This statement is contradicted in the Draft EIS by the 1987 NAS/NAE report and the 1988 ACNFS report of major concern over management issues, the 1988 P Reactor startup fiasco, and the recent series of mishaps over the last two months as revealed in the Energy Department's daily reports.	
A-34-09	Because of past and continuing concerns, the Draft EIS should recommend that all safety, technical, and management structure issues are resolved despite any decision on reactor restart but certainly before any restart is contemplated. This evaluation should include completion of the severe accident evaluation currently underway. The SRS Site region includes both Richmond and Columbia Counties, where 23% of SRS employees and 60%—over 250,000 people—of the site region reside. Yet, Richmond and Columbia Counties have not been included in the SRS site County emergency plans and procedures. Portions of Richmond County do indeed fall within a 16 km radius (which seems quite arbitrary) of SRS, which is the SRS definition of an Emergency Planning Zone. Therefore, the Draft EIS should answer the following questions:	DOE has revised Section 2.1.2 of the EIS to describe the modifications that will be completed before and after the resumption of production, and Section 4.1.3 presents an analysis of the risks to health from severe accidents with the reactor configuration when production resumes. DOE will complete any safety upgrades that would materially reduce these risks. As stated by Secretary Watkins on several occasions: "Restart of any of the SR reactors will not be authorized until I am personally satisfied that they can be operated safely." The independent Defense Nuclear Facility Safety Board, which began its functions after the input to the Draft EIS was complete, also will provide its judgment on the readiness of the reactors to resume production.
A-34-10	*Why is the largest metropolitan area included in the SRS Site region definition exempt from County emergency planning?	As revised, Section 3.9 of the EIS states that Richmond County falls outside the EPZ (i.e., it is beyond 10 miles from any of the reactors), and therefore does not require planning for the prompt movement of people. The State of Georgia is responsible for determining and implementing protective actions for the IPZ.
A-34-11	*What are the effects of a lack of County emergency planning on accident scenarios for Richmond and Columbia Counties?	At their respective distances from the SRS reactors, and with State plans in place, these counties would not be expected to be materially affected by the absence of specific response plans for SRS nuclear accidents.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response																		
A-34-12	*Which hospitals in Richmond and Columbia Counties may realistically expect to receive accident victims in severe accident scenarios? <u>4. The Draft EIS fails to adequately address the costs of continued reactor operations vs placing them on cold standby or decommissioning.</u> As noted in my statement on the absence of medical expertise in the Draft EIS preparation, it should also be noted that there is only one individual involved with this draft preparation with any stated experience in economic analysis. The total economic analysis reported in the Draft EIS are two unsubstantiated statements that reactor operations have contributed substantially to the rise in the standard of living in the site region and that reactor termination would result in the loss of thousands of jobs. The Draft EIS should look at costs in several different and expanded ways. Cost analysis includes both tradeoffs and options. The total program costs of the 98 major weapons currently in production in the U.S. is over \$800 billion. This compares to \$54 million spent by the Federal Government in 1988 for AIDS and \$450 million for the budget of the U.S. International Narcotics Control. Over 100 new toxic waste sites were added to the EPA's list of most dangerous sites in 1989 while only 8 were cleaned up. Standards of living are another measure of the relative costs of an action and can be defined many ways, one of the most important being the health of a region compared to some standard. If a rise in the standard of living of SRS site regions has occurred, then we should see better health indices. The largest population center in the site region, Richmond County, had the following health indices in 1989: <table> <tr> <th></th><th><u>Richmond County</u></th><th><u>Georgia</u></th></tr> <tr> <td>Low Birth Weight</td><td>8.3%</td><td>8.2%</td></tr> <tr> <td>Crude Mortality Rate</td><td>8.6/1000</td><td>8.0/1000</td></tr> <tr> <td>Crude Child Abuse Rate</td><td>6.26</td><td>5.1</td></tr> <tr> <td>Alcohol and Drug Related Deaths</td><td>20/100,000</td><td>15/100,000</td></tr> <tr> <td>Sexually Transmitted Diseases</td><td>3262/100,000</td><td>1601/100,000</td></tr> </table>		<u>Richmond County</u>	<u>Georgia</u>	Low Birth Weight	8.3%	8.2%	Crude Mortality Rate	8.6/1000	8.0/1000	Crude Child Abuse Rate	6.26	5.1	Alcohol and Drug Related Deaths	20/100,000	15/100,000	Sexually Transmitted Diseases	3262/100,000	1601/100,000	As stated in Section 3.9 of the EIS, DOE has a Memorandum of Understanding with the Eisenhower Army Medical Center at Fort Gordon to assist in SRS emergencies and to accept radiation-exposed or contaminated emergency patients.
	<u>Richmond County</u>	<u>Georgia</u>																		
Low Birth Weight	8.3%	8.2%																		
Crude Mortality Rate	8.6/1000	8.0/1000																		
Crude Child Abuse Rate	6.26	5.1																		
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Sexually Transmitted Diseases	3262/100,000	1601/100,000																		

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-34-13	These statistics do not support a unified theory of higher standards of living for the site region.	The socioeconomic region of influence, which is described in <u>Socioeconomic Characteristics of Selected Counties and Communities Adjacent to the Savannah River Site</u> (referenced in the EIS), consists of four counties in South Carolina and two in Georgia. A comparison of the standard of living, housing rents and values, and inflation rate in these six counties to those for South Carolina, Georgia, and the United States shows that the region of influence is similar to or slightly below the larger areas.
A-34-14	The Draft EIS perspective analysis on the costs of human lives gives an estimated annual risk of death, showing the risk of smoking one pack of cigarettes a day to living near a nuclear reactor. Given this type of analysis, the Draft EIS should also consider the total costs of SRS K, P, and L reactor restart and continuing operations compared to the costs of improving infant mortality, access to health care, etc. For instance, for the costs to upgrade the reactors to produce Plutonium 238, estimated to cost "several tens of millions of dollars", the entire state of South Carolina infant population could be immunized. The Draft EIS should also answer the following questions:	Congress, and not DOE, is responsible for the authorization and allocation of funds for alternative public uses. Such an analysis is not within the scope of this EIS.
A-34-15	*How much will it cost to clean up current wastes previously generated by K, L, and P reactors at SRS, and how much will the projected future costs be for cleanup using alternative production cycles?	The EIS on <u>Waste Management Activities for Groundwater Protection, Savannah River Plant</u> (DOE/EIS-0120) addresses alternative approaches for the management of SRS wastes. The DOE Five Year Plan for Environmental Restoration and Waste Management (DOE/S-0078P) provides preliminary estimates of about \$830 million for SRS environmental restoration and corrective action costs through Fiscal Year 1996. Alternative production cycles will not materially affect future cleanup costs.
A-34-16	*Which alternative uses of money are appropriate comparisons for reactor restart cost/benefit ratios?	The comment goes beyond the scope of this EIS. Please see the response to Comment A-34-14 on funding.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-34-17	*Other than massive layoffs of 9000 workers, what additional alternative employment strategies might be employed, such as transferring workers to cleanup efforts, in the consideration of alternative reactor operation plans? In conclusion, I would like to give a quote by Jack Geiger, a Past President of Physician's for Social Responsibility and an International expert on Nuclear Weapon's medical effects: "A central requirement of medicine...is: 'First do no harm.'" That applies with equal force to agencies like the Department of Energy, whose operations affect the public health." Thank you.	The development of alternative employment strategies is not the responsibility of DOE. In all likelihood, reactor operation specialists would have no difficulty finding employment in the commercial nuclear industry. Other staff members might find employment in some aspects of site restoration activities, but these activities generally would require different expertise than does reactor operation and maintenance.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	COST OF THE ARMS RACE FACTS MILITARY The total program cost of 98 major weapons programs currently in production: \$819 billion. Department of Defense 1989 Number of warheads on bombers, submarines and ICBMs in the combined US & USSR arsenals: 23,370. National Resources Defense Council, 12/89 Kilotons of explosive energy in the US and USSR's nuclear arsenals: 15,500,000. Bulletin of Atomic Scientists, 12/89 Kilotons of explosive energy in the atomic bomb dropped on Hiroshima: 12-15. National Resources Defense Council, 12/89 Annual expenditure per soldier in developed countries: \$70,000. Ruth Leger Sward, World Military & Social Expenditures 1989, page 15 US expenditures on defense programs during the 1980s: \$2,600,000,000,000 (\$2.6 trillion). Congressional Research Service, Defense Budget for 1990, 5/11/89 Amount the US spent on defense programs per day during the 1980s: \$712 million. Congressional Research Service, Defense Budget for 1990, 5/11/89 Total Budget of the U.S. Arms Control and Disarmament Agency, FY 1981-88: \$165,195,000 Total Budget of the Pentagon, FY 1981-88: \$2,020,500,000,000 Total Budget of the Department of Energy, FY 1981-88: \$50,449,000,000 Only 8 states -- Alabama, California, Colorado, Maryland, Massachusetts, New Mexico, Utah, Washington -- and the District of Columbia, stand to receive more money from SDI contracts than their citizens will pay in taxes to support the program. Federation of American Scientists/The Tax Foundation, Inc., 1989 Only 5 states -- California, New Mexico, Ohio, Texas and Washington -- stand to receive more money for B-2 Stealth Bomber contracts than their citizens will pay in taxes to support the program. Federation of American Scientists/The Tax Foundation, Inc., 1989 HEALTH Amount the Pentagon spent in FY 1988 to develop defenses against biological weapons: \$58,800,000. U.S. Army Medical Research and Development Command, 1988 Amount the federal government spent in FY 1988 to develop a vaccine for AIDS: \$53,925,000. U.S. Department of Health and Human Services, 1988 Americans who have neither public nor private health insurance: 37 million. Ruth Leger Sward, World Military and Social Expenditures 1989, p.45 Ratio of soldiers to inhabitants in the developing world: 1:240 Ratio of physicians to inhabitants, 1:1950. Ruth Leger Sward, World Military and Social Expenditures 1989, p.5 Number of people killed in an average year in the 127 wars since 1945: \$25,000 Annual number of mothers who die in childbirth: 500,000. Ruth Leger Sward, World Military and Social Expenditures 1989, p.11 People worldwide who do not have access to safe drinking water: 1.6 billion. Ruth Leger Sward, World Military and Social Expenditures 1989, p.11 People worldwide who are chronically malnourished: 950 million. Ruth Leger Sward, World Military and Social Expenditures 1989, p.11 Children worldwide who do not survive until their first birthday: 10 million. Ruth Leger Sward, World Military and Social Expenditures 1989, p.11 In 1980, the U.S. Military budget was 5 times greater than the U.S. Housing Budget. In 1989, it was 31 times greater. Center on Budget and Policy Priorities/Defense Budget Project, April 1989 Total International Narcotics Control Budget (US) for FY 1990: \$449 million. Office of National Drug Control Policy Cost of one B-2 Stealth Bomber: \$530 million. US Air Force Number of new sites added to the Environmental Protection Agency's (EPA) list of most dangerous sites in 1989: 109. Number of toxic waste dumps cleaned up in 1989: 3. US EPA, RCRA-CERCLA Hotline, 1989	

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response

SRS trainers fired after 'hooky' OK'd

By John Walters
Sept. 1988

Two Savannah River Site reactor training instructors were fired earlier this month for encouraging reactor operators to skip a required course and then falsify attendance records, and two operators who skipped the session were suspended.

The two instructors worked for a subcontractor in Westinghouse Savannah River Co., the site contractor, according to Pat Weber, spokeswoman for Westinghouse. She did not know the name of the subcontractor.

The two reactor operators were suspended without pay for two weeks and placed on probation. Mr. Weber said, adding that she didn't know whether the two operators

would be allowed back to their former positions.

Mr. Weber said the violations were discovered by the company.

"We conducted a quality control program to check for this type of thing," she said. "We both learned from the commercial industry and have hourly attendance checks."

"Our quality control worked. It had the right effect and we did take corrective actions," she added.

Savannah River reactor operator training levels have been criticized by environmental groups. Energy Secretary James D. Watkins and a special five-member oversight panel appointed by Mr. Watkins earlier

See TFO, Page 2A

Thursday, May 24, 1989

Two firings revealed in documents

Continued from Page 1A

maintain training of SRS isn't up to commercial standards.

Westinghouse has increased the level of operator training in response, and Mr. Watkins has indicated he is satisfied with the program.

Mr. Watkins said recently that the first of three SRS reactors will be restarted in December or January, after being shut down more than two years for safety upgrades, establishment of new operating procedures

AUG 1

DOE review

A review of the Energy Department's daily reports over the past month relating to the Savannah River Site found the following:

in April 18: An L. Reactor building superintendent ordered his locked and disturbed room and found a Westinghouse Savannah River security guard getting up from the floor. "There was insufficient evidence to support an allegation of sleeping on duty."

in April 28: Forty-six grams of morphine found outside a bathroom stall. "Someone tossed it out of our path to being searched for access to the."

in May 7: Clean radioactive waste found in a dumpster in Augusta by a Westinghouse employee. "Boxes of this type are widely used in non-DOE nuclear activities. History of the boxes is being investigated."

The most recent firings and suspensions were found in a review of the Energy Department's daily operations. The reports are compiled for Mr. Watkins, to give

him a snapshot of daily activities. Energy defense sites.

The daily logs described the activities of the reactor operators. "A required self study session."

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-35	STATEMENT OF GLENN STARK	
	My name's Glenn Stark. I've been both in the United States Marines Corp, and I've been with Greenpeace; however, I'm here, representing neither.	
A-35-01	You can argue all you like about relative risks and various protection schemes, but no matter what, you know that this New Production Reactor facility is dangerous. Regardless of how long you postpone the crisis at SRP — and what I'm saying is postpone a crisis — if you run it long enough, eventually, you're going to have one. That still means hazardous. Table S-1, page S-5 of the Environmental Impact Statement, understated though it is, makes this obvious. "Leaking nuclear waste containers, poor management oversight practices, and errors and failures in radiation monitoring equipment are just examples of already ongoing problems there." If you don't realize and admit the danger caused by this facility, you're either a fool or a liar.	This EIS addresses the continuing operation of K-, L-, and P-Reactors; the NPR will be the subject of a separate EIS.
A-35-02	The issue that I'm here to address, however, is not the safety of this plant; I feel that that's been covered adequately. I am here because I would like to address the subject of the supposed need of SRP. Being a Marine, I understand the rationale behind the mad nuclear destruction. I understand the meaning of a deterrent nuclear weapon facility; however, I see no need to increase our current arsenal. In light of recent peace accords, we need to look at reduction, not new production. The short half-life of tritium is the chief reason to justify the reopening of the Savannah River nuclear plant. If one takes into account our current stockpile of tritium — Appendix A, classified — and recent arms agreement, this argument does not hold water. The official policy of the United States regarding the use of nuclear, biological and chemical warfare is that such technology will only be used in retaliation, not as a first strike weapon. However, a number of defense projects, such as the strategic defense initiative, the Trident II base missile system, and Stealth cruise missile system contradict this policy. If we scrap these un-American projects, the surplus material could be used to maintain our current defensive arsenal. The Government has forgotten that it's created to represent the needs of the people, not large	Please see the response to Comment A-06-01 on the need for tritium. The need for nuclear weapons is beyond the scope of this EIS.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	industry. I didn't become a Marine to defend a nation that sacrifices the health and welfare of its people for the wealth of a few.	
	That's all I have to say. Thank you very much.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-36	STATEMENT OF AMY CONLEY COMMENTS BY AMY CONLEY DOE'S PUBLIC HEARING ON DRAFT EIS AND RESTART OF K, L & P REACTORS AT SAVANNAH NUCLEAR WEAPONS PLANT June 8, 1990 Aiken, SC	
A-36-01	I question the need to continue production of tritium. I understand that decay rates are a concern but I'm talking about the Big picture...the global concern. In an era of ever-hopeful arms negotiations we are crazy to continue to subject our nation's citizens and others to the threat of another Chernobyl or a nuclear war. I am sure that workers at SRP <u>are</u> well trained and competent but accidents <u>do</u> happen.	Please see the response to Comment A-31-03 on SRS reactor characteristics.
A-36-02	*See p. 1-3 of EIS Think of the changing political climate. If we and other nation's would stop <u>testing</u> nuclear weapons we would not need tritium. If we stop building bombs we would not need tritium.	Please see the responses to Comments A-06-01 on the need for tritium and A-06-07 on the changing world geopolitical situation.
A-36-03	At the 43rd Annual Conference on World Affairs this past April in Boulder, Colorado many international guests spoke. At one lecture, Rear Admiral Eugene Carroll from the Center for Defense Information spoke out <u>against</u> nuclear weapons. He said, "There is no economic, political, or rational need to continue nuclear weapons testing." We have highly advanced technological capabilities that enable us to monitor nuclear testing world-wide. There are at least 41 nations who have agreed to sign a revised version of the current Limited Test Ban Treaty. The revised version would be a Comprehensive Test Ban Treaty. The Soviets have agreed to sign — the United States <u>has not</u> . What is the use of external defense with a cost of internal destruction? Is this for profit? Are the military and weapons systems the only resource that the U.S. has to offer this planet? We seem too concerned with political boundaries to realize that we all drink the same water and breathe the same air.	The Test Ban Treaty is beyond the scope of this EIS. Please see the response to Comment A-06-07 on the changing world geopolitical situation.
A-36-04	I beg you to stop the restart of the Savannah River Plant, shut down <u>all</u> nuclear weapons facilities, set up an international peace-keeping nuclear testing monitoring system, sign a CTB treaty and clean up the waste we've already created. Thank you.	DOE will, at the direction of the President and the Congress, close the SRS and decommission its facilities when there is no further need for these facilities. Please see the response to Comment A-09-02 on waste management and environmental restoration.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-37	STATEMENT OF NATHAN PRICE	
	MR. PRICE: My name's Nathan Price, and I represent myself. And I would like to say that I am opposed to the restart of the reactors. And I won't go into detail as to why because I'm sure that you have heard of the dangers, and you have been hearing for days.	
A-37-01	And yet, I do not want the people in Aiken to lose jobs. I do think that they should diversify their economy and find new ways to, you know, make a living. And I think that one of those ways that could come about is the cleanup of SRP. I understand that the technology doesn't exist yet to clean up what needs to be cleaned up. I mean, that's something to work on — that's something that they could work on. And if you're concerned about the people and the water supply, I think that that's one thing that should be looked at.	Please see the response to Comment A-09-02 on waste management and environmental restoration.
A-37-02	One thing that wasn't included in the draft EIS is the health records of the workers at the Savannah River Plant, which the Three Mile Island Health Fund has been trying to get from the DOE, which they had to sue the DOE for in 1987. These records are not being made public, or they won't be when they're available. They're being released to the Three Mile Island scientific investigators and other qualified researchers. Yet, this info will not be released until August 18, 1990. I think that this information should be open to the public, and it should have been included in the draft EIS. We should at least postpone the restart until these health records are taken into account. And that's basically what I have to say. Thank you.	The results of an examination of SRS worker health records have already been published, as noted in Appendix B of this EIS, which also discusses other past and ongoing studies of SRS workers and the neighboring populations.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-38	STATEMENT OF KAREN MCNAY	
	MS. MCNAY: My name is Karen McNay, and I'm here, representing myself.	
	I'm completely opposed to reopening the nuclear reactors here at the Savannah River nuclear Plant for a number of reasons that I know that we've all heard, but I just want to state some because I think they're pretty imperative.	
A-38-01	It seems to me that the people in Aiken and the people in the south are hanging in a continuous balance of the human condition, which is often more one of fallibility. And we saw it at Chernobyl, and it does happen. I think that it's rather careless to not even consider the possibility.	In Section 4.1.3, the EIS discusses severe accidents that consider human as well as equipment failures in arriving at the estimates of public and worker risks from such unlikely events. Also, please see responses to Comments A-30-03 on health effects and A-31-03 on Chernobyl.
	Also, I don't think that this country was founded on the basis of capitalism; I think that democracy was the idea. I think that the idea of justice has gone out the window. You know, people are not being treated fairly; it's a concern that I have. And I understand that there is so much secrecy surrounding this; why can't we look at this EIS with a Section A released? Why can't we have the information? I mean, the military industrial complex is like a condescending parent. I think that I probably know what's better for the economy than Westinghouse or DuPont.	
	And we always hear about this, and I'd like to see some changes made. I think that we have the ability to be recognized for doing something special. What about the people who inherit this earth? And what about its poison, and we are leaving it for our children, and that's a crime. That includes no justice. And to me, that epitomizes what capitalism is: that these people from Westinghouse are capitalist running dogs. And that's society. And democracy does not survive when everybody isn't included and when justice is an idea that doesn't count. Thanks.	

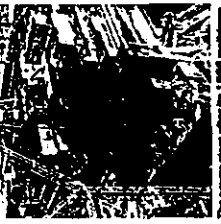
Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-39	STATEMENT OF JENNA MORAN ROAD 2 WEST ROAD ALFORD, MA 01266 Okay. My name is Jenna Moran, and I'm here, representing myself. You know, basically, I think that I am going to say again what many people have stated before, but since it's the place to say it, I would like to say it myself. Basically what we have to focus on is Chernobyl. I have with me an article that was printed in <u>Time</u> magazine early this April that covers the Chernobyl disaster. "Four years have passed since the disaster at Chernobyl nuclear plant, but the grim legacy of the Soviet catastrophe is still unfolding. Large populated areas surrounding the reactor site have been reclaimed, and it has been discovered that they contain high levels of radioactivity. A doctor at the hospital says that in the last 18 months, there has been a dramatic rise in cases of leukemia and cancer. Residents have also begun complaining of fatigue, loss of vision and appetite, all symptoms of radiation sickness. Worst of all, there has been a sudden drop in the immunity level of the entire population. Healthy people are having trouble getting over their illnesses, and children are the most affected. "Furthermore, there is an explosion of birth defects among livestock, deformed lower jaws and disjointed spinal columns. One hundred ninety-seven freak calves have been born at a collective farm in Russia. Some animals have no eyes. One was a mastoid mass. At a collective farm in Vyazovka, about 200 abnormal piglets have been born. "Despite the removal of radiation, many residents leave their home and become refugees. Cities have been put on hold. Some refugees have returned illegally to the evacuated area. They may not realize the dismal fog that is next to the earth." I think that this is the first example for people to realize what we're talking about when we're talking about nuclear radiation; this is serious business. This is me speaking personally: I don't	
A-39-01		Please see the response to Comment A-31-03 on Chernobyl.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	understand how anyone could want to produce bombs that produce animals with eight legs, kids being born with no eyes — is that how you want to treat the other members of this world? Is that how you want to treat planet because they might have different ideologies than us? And who says that they have different ideologies? We differ by our government; I think that we are all the same people, and I think that no one really wants to produce this kind of expression of our world, of our planet. And even at SRP, they're producing this. This is just a reactor, and this happened. This is not even war. Do we really want to do this to ourselves? Why do we have to keep producing this? It's a waste of our money, and it's a false economy that I feel really needs to be stopped now. That's all that I have to say. [Ms. Moran submitted the article entitled "Legacy of Disaster" that she had discussed (TIME, April 9, 1990). The article has been placed in the DOE Public Reading Rooms.]	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
Environment	 The picture shows the 1,000-ton cooling tower at the Chernobyl nuclear power plant. Legacy Of a Disaster <i>A Soviet photographer captures haunting images of life after Chernobyl</i> Four years have passed since the meltdown at the Chernobyl nuclear power plant, but the legacy of the disaster remains. Large populated areas surrounding the reactor site in the Ukraine and in neighboring Belarus remain contaminated with high levels of radioactivity. The poisoning of the land has created dire health problems and economic devastation. Soviet government officials estimate that the cost of Chernobyl, including the price of the cleanup and the value of lost farmland and production, could run as high as \$358 billion—20 times as much as earlier official estimates. Most of the disturbing news about Chernobyl comes from the pictures that have leaked the past few years. Among the most poignant is Igor Kozin, a photographer who has captured the tragedy from the early days after the accident. His latest set of photographs, taken within the past four months, presents haunting images, including scenes of children still living in contaminated towns and shots of animals born horribly deformed, probably because of radiation. The pictures,	 

DOE/EIA-0142
A-11
C-910

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response



At Zelenye in Naraitchi, a well has eight legs:
in Naraitchi, a child watches as a water
regulator on a nearby level of radiation
in the air



A militiaman guards a
Naraitchi town that was
evacuated in 1986; the
sign reads: ENTRY IS
FORBIDDEN; FORNHOOD
ZONE; the eyeless pig is
one of scores born with
defects

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response

C-912

Environment

Flies in the smoldering remains of the Chernobyl plant, as the insects grow much larger and weaker than normal



which are being published for the first time in the West in these pages, are part of an exhibition organized by the Italian firm Imago that will be touring in major U.S. cities, beginning with Baltimore in May.

Soon after the Chernobyl meltdown, Soviet officials ordered the permanent evacuation of villages within 30 km (19 miles) of the power plant, but heavy nuclear fallout covered a much broader area. In some parts of Narodichi, a Ukrainian agricultural district whose boundaries lie some 60 km (37 miles) from the reactor, levels of radioactivity are still nine times as high as the acceptable limits, according to the local Communist Party chief. Vladimir Ly-

sovsky, a doctor at Narodichi District Central Hospital, contends that in the past 18 months, there has been a dramatic rise in cases of thyroid disease, anemia and cancer. Residents also have begun complaining of fatigue and loss of vision and appetite—all symptoms of radiation sickness. Worst of all, there has been a startling drop in the immunity level of the entire population. "Healthy people are having trouble getting over their flu," Lysovsky notes. And children are the most affected.

Farmers, meanwhile, are seeing an explosion of birth defects among livestock. Cows have appeared with eight limbs, deformed lower jaws and dislocated spinal

columns. Photographer Kotin expects that 1977 freak calves have been born at the Yuri Gagarin collective farm in Vynohora. Some of the animals had no eyes, deformed skulls and distorted mouths. As a farm in "Maidnovka," about 200 kilometers away, have been born since the accident.

Despite the lingering radiation, many residents refuse to leave their homes and forests religious. Plans to clear out more villages by force have been put on hold. Some Ukrainians have even returned illegally to evacuated areas. They may not realize that the invisible filth will be dangerous for years.

—By Associated Press
Reprinted by Paul H. Hoffmann

Man with a Mission

Just hours after the Chernobyl accident, Igor Kotin, 53, "I wanted to prove that I was a man." He also proved he was a good journalist by becoming the first photographer on the scene. "There was still smoke coming out of the reactor," he says, "but I managed to get a few shots off. You could actually feel the silence. It was like a cemetery."

Since then, Kotin has returned to the reactor site six times and has traveled extensively through the contaminated regions. His mission: to document the world's worst nuclear catastrophe. "People have the right to know," says Kotin, who devotes a third of his time to covering Chernobyl's aftermath. "The technology of nuclear energy is not perfect. This could happen anywhere." Kotin lives in Kiev, 100 km (62 miles) from Chernobyl, and was a successful construction engineer before turning photographer at age 36. His trips to Chernobyl and its environs have deeply disturbed him. The



Photo courtesy of Igor Kotin

children he saw haunt him the most. "They are the ones who became innocent victims of our so-called civilization." As for himself, "It's hard to live among normal people now," he observes. "A person who has been through hell has a different way of thinking. He becomes the alien." He has a mission, however, to tell the world the truth about Chernobyl. Having been exposed to about five times the acceptable level of radiation, Kotin is constantly tired and sometimes has trouble walking. He has been hospitalized three times for radiation poisoning. His 16-year-old son Nikolai fears for his father's health and has pleaded with him not to go back to Chernobyl, but Kotin feels compelled. "This is the only record of what happened there," he says. "I have to carry on."

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-40	STATEMENT OF FELICIA RENSBERGER	
	MS. RENSBERGER: My name is Felicia Rensberger, and I'm representing myself. There's been a lot said today about the dangers of radiation which, to me, is just common sense. It is obvious, I think, that the people who work for the DOE are obviously ignoring the dangers.	
A-40-01	What I want to talk about is something that has been totally ignored in the EIS, which is the psychological impacts of a society that's constantly living under the threat of total nuclear destruction. Our children are raised with the knowledge that any minute, there can be nothing more, and that's not healthy. That's not a healthy way to live, and it just produces many of the problems that we see in society today.	The psychological impacts of the threat of nuclear warfare are beyond the scope of this EIS.
A-40-02	The other aspect of that is simply, speaking for myself, living here in the SRP community. If they start again, what if they have an accident? Nobody is perfect, and nothing in this world is perfect. If they have an accident, what is it going to do to the hundreds of thousands of people living in the immediate area? What about children who are going to be born with birth defects? In Chernobyl, a baby was born with no face; we don't want children born like that. I think that it's an outrage; I think that that the people who would put the South Carolina people and the rest of the world through this on the false premise that we need nuclear weapons, that we need war; that's not true. What we need is peace, and the only way that peace can be attained is through communication, listening to people, not threatening them with, "We can destroy your country faster than you can destroy ours." That's school children bullying each other, and it's not the way to lead the world for me, and to lead the world for my kids. And I just want to express that I'm really angry, and I think that there are a lot of people out there who are really angry at the way that this is being handled. This country was created for the	Please see the responses to Comments A-30-03 on health effects and A-31-03 on Chernobyl.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
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people and by the people, and if it does not change, the people are going to have to start taking a stand and standing up for themselves.

And I would like to get it on the record that psychological effects of nuclear weapons building and a nuclear war has not even been thought of, and I think that that's very important. Thank you.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-41	STATEMENT OF J. M. CLARK JR. STATEMENT IN SUPPORT OF THE ENVIRONMENTAL IMPACT STATEMENT FOR RESTART OF THE SAVANNAH RIVER SITE REACTORS JUNE 8, 1990	
A-41-01	My name is J. M. Clark, Jr. and I am a resident of the City of Aiken and I am here today to speak in support of the Environmental Impact Statement and the restart of the reactors at the Savannah River Site. I have lived in Aiken since 1987 and have watched with great interest the controversy surrounding the Savannah River Site and the operation of the reactors associated therewith. When I moved to Aiken, I did so without fear or trepidation concerning the operation of the reactors and the associated facilities. Being a reasonably intelligent and college educated person, it would make one think that if there was a serious problem or treat to my or my families' personal well being because of the operation of the reactors that I would not have chosen to locate in this geographic area. I consciously made a decision that the quality of life that would be afforded me and my family in the community of Aiken and the surrounding area was what I wanted and the operation of the SRS reactors presented me and obviously has presented many others little concern over locating here. All of our lives here on this earth are finite. I do not believe that any of us consciously want to shorten that life span by knowingly exposing ourselves to risks which are greater than a prudent person would want to take. However, I take risks and each and everyone of those here today take risks that are considered prudent by our societies standards. For example, I took a very great risk today in getting in my car and driving to this hearing to make this presentation. I recognized the consequences of that risk but I thought it was a prudent one to take. Likewise, I feel that the restart of the K, L, and P reactors at SRS also present risks but the risks are prudent ones to take and the consequences are ones that I, personally, and I think this community in general are willing to live with.	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-41-02	I am obviously not the only one that feels such as this. Over 80% of the people who have spent most of their working careers at the Savannah River Site choose to retire in the Aiken area. These are the knowledgeable workers who spent day upon day at the SRS facility and know the interworkings much better than most of us here in this room today. These are the people who know if the reactors are safe to operate. These are the people who have families - husbands, wives, children, grandchildren, great grandchildren, all located in the Aiken vicinity who have chosen to stay here because Aiken offers them the quality of life that they desire and also because SRS has been a safe place for them to work and it poses no unreasonable treat to their families nor to mine.	Please see the response to Comment A-05-02 on the preparation of the EIS.
	The Environmental Impact Statement is detailed and complex to understand even for those with professional credentials that qualify them as specialists in matters discussed in the statement. Therefore, I will not attempt to debate the correctness of the findings as they are presented. However, I do ask that you make your decision on a restart based on the facts that are contained therein, and not on the emotional appeals of those who oppose the reactors restart. I would ask that you weigh heavily the views of those who are considered experts and base your decision on their testimony and input.	
	There are over 400 Masters and PhD. degreed professionals at the SRS facility who deal with the many and varied complex issues regarding the restart and the operation of the reactors. I know many of these professionals personally and have spoken with them on several occasions and feel comfortable in their reassuring remarks that the reactors can be restarted and operated safely and pose no imminent danger to themselves as workers at the site, to me as a resident of this city and to the population of this geographic region as a whole. The correct procedures have been taken by DOE and Westinghouse to insure that the proper training and safety requirements have been implemented to provide for a trouble free restart.	
	While I want this area to be environmentally protected so that it can continue to provide me with the quality of life that I and my family are accustomed to, I also want to see the reactors started as a means of security for my family and my country. For over 40 years SRS has provided a strong deterrent to the threat of Communism and	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-41-03	other subversive governments that would like nothing better than to have control of the United States and the world. There is much talk these days concerning the lack of need for the tritium that is produced at the SRS facility because of the successful negotiations between the United States and the USSR on disarmament of our nuclear arsenals. To date, I have not seen any treaties that have been signed, nor physical actions that have been taken to dismantle either sides nuclear stockpile and therefore I want my government to be afforded the opportunity to maintain it's deterrent to outside forces by having a ready supply of tritium for the refurbishment of the nuclear war heads that we command. As there are other professionals who know much more about the safety aspects of operating the plant than I do, there are likewise professionals who also know the need for the tritium that is produced at the plant to maintain our nuclear missiles. Our Department of Defense professionals, with approval of our President, have requested that they be provided with new supplies of tritium and I, for one, think they know the need for this request better than any of us here today. Again, let me urge the DOE to base their decision for restarting the SRS reactors on the facts. The facts are that the SRS reactors are safe to restart and the need for their output is well documented and therefore we should do everything possible to see that the SRS facility is restarted in accordance with the recommendations of the experts who have said it is safe to do so. Thank you.	Please see the response to Comment A-06-07 on the changing world geopolitical situation.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-42	STATEMENT OF BILL LAWLESS	
A-42-01	MR. LAWLESS: I'll be glad to do that. My name is Bill Lawless. John, it's good to see you again. My qualifications are that I'm a mechanical engineer; I've got a master's degree. Also, I'm an Assistant Professor of Mathematics at Paine College, but I'm on leave; I'm at Virginia Tech now. I'm representing myself. It's good to be here today. It's good to see you again, and others. And it's good to get into some of the issues. I like a lot of the interactions that I've heard this morning, and I like the way that both sides of this issue have been able to present their cases. And I'd like to say that I'm impressed by the job that you've done yourself, John. My comments on the Environmental Impact Statement. The Department of Energy said that if its preferred alternative is not implemented, it will lose 10,000 jobs. Now, that's a threat that the Department is making, and they made the same threat at the Hanford facility two years ago, with the N-reactor and of course, that hasn't materialized because nuclear waste cleanup has growth industry. You've actually seen an increase in employment in Hanford. And so, I think that we can dismiss this threat on the technical merits, but it's interesting to note that it was made before national security issues. And I think that it was made because the Department of Energy is today in trouble throughout the United States. Every new project that it's putting forward has been blocked; every Site in the United States today is having contamination problems, as we knew as far back as 1980 and 1978. This, indeed, was the case when I worked for the Department. And it looks to me like the Rocky Mountain repository will not be funded; and if it's not funded, then, that will mean that the DWP factory here at the Savannah River Plant will indeed be a white elephant, as was predicted by the National Academy of Sciences some years ago. So, I don't think that it's the 10,000 jobs that are at issue with the Department of Energy, but I think that the threat represents a very real threat to the Department itself. And the Department has lost a lot of prestige over the past years; the work	This EIS deals with the proposed action of continuing the operation of the SRS reactors and the alternatives to that proposed action. Section 4.1.3 states that the alternative of terminating the operation of all three SRS reactors would result in the loss of an estimated 9,600 jobs. Because the SRS environmental restoration program (as well as other programs) is separate and distinct from the operation of the reactors and is not a component of the proposed action, it would be inappropriate to offset that estimated loss of reactor operation and production jobs with the potential creation of environmental restoration jobs that might be created by another program, because required job skills might not be commensurate.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	of its scientists and engineers is nullified on editorial pages throughout the United States. And I think it has not only lost prestige, but power, and that's what's at issue here.	
	My concern is that the Environmental Impact Statement that we have before us today is not only a problem, but it is a potential solution for all sides. My concern with the Environmental Impact Statement is that it has not been independently reviewed. I'm very pleased with a lot of the comments that are in this impact statement. There's the ACNFS, the facility safety group that's now providing independent input into the Department — the NFS, the Safety Board, and the National Academy of Sciences, and other external organizations. But these are not independently-funded peer review groups. Since there is a lot of confusion on that, I thought that I would address that issue today.	
	First off, the National Academy of Sciences has made many recommendations. But the National Academy of Sciences is not an independent-funded peer review group. The Academy was funded by the Department of Energy, and in the past, that has compromised the Academy's results. In 1987, it did not because the Academy had a lot at stake. However, the Academy made a lot of good recommendations in 1987, which are somewhat flushed out here in this Environmental Impact Statement.	
	The Department of Energy has attempted to address a lot of the Academy's concerns and reservations but, for the most part, these are unilateral decisions, and there have been no responses from the National Academy of Sciences on the programs implemented by the Department of Energy. One of the references used was the War of 1980 dealing with vessels irradiation and problems, one of the concerns that the Academy had. And this was expressed in 1987, so, you can't use a 1980 reference to dismiss a 1987 concern.	
A-42-02	Independent peer review would never allow the reactor to start up before completing the reviews. In here, we talk about PRAs — probabilistic risk analysis — and they will not be done, even the Level I PRA, before this EIS goes final. Only the Level I will be done before reactor restart, but the other two — the Level II and Level III PRAs — will not be done until after restart. The Level III deals with population evacuation, so, an independent peer review would not allow that.	The Level-1 PRA was completed in June 1990. It has undergone independent peer review by the Senior Review Panel, the DOE Independent Review Panel, the High Level Peer Review Panel, and the ACNFS. Recently, the DNFSB began its review of the SRS PRA. Independent peer reviews of Levels 2 and 3 are ongoing. Please see Section 2.1.3.1 of the EIS for a discussion of peer review groups.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
C-920 A-42-03	On pages 252 and 256, you talk about independent organizations providing independent expertise, and I like this word, "independent," but those are not independently-funded peer review groups. If you're going to use the Idaho National Engineering Laboratory in Los Alamos for external review, those are funded by the Department of Energy, and they cannot provide independent peer review.	
	Independent peer review would not allow technical statements to be made in this Environmental Impact Statement without references. You've got quite a few paragraphs under the vessel cracking study and vessel aging study without references. And so, this smacks more of opinions than it does of professionalism. On page 217, you refer to the radiation test program without reference. Low pressure vessel -- there is no pressure provided. I understand that it is 5 psi; that should be stated in reference. On page 219 in the EIS, we're talking about vessel cracking subjected to close scrutiny -- no reference, no results. Page 219 -- "program underway to doublecheck the vessel cracks" -- no results.	
	On page 219, you talk about geometric indication; what is a geometric indication? A tree is a geometric indication. This is in a paragraph with vessel cracks. You should be a little bit more specific about what a geometric indication is.	DOE has revised the section to read "geometric reflector."
	In summary, independent peer review should be funded independently of the Department of Energy, and independent peer review should have the authority to prevent the publication of an environmental impact statement unless its concerns are addressed in that. We've got a lot at stake here, both sides, and I think that without independent peer review, if the Department were to restart the reactors today, then, it would have to assume all of the responsibility if anything goes wrong with those reactors. Independent peer review would allow the Department of Energy to shoulder or to share some of that responsibility with independent groups, and it would make for a better product. This Environmental Impact Statement right now, I'm afraid, is a prescription more for disaster than it is for professionalism, and I would like to see it improved, and only independent peer review can get that. Thank you. Do you have any questions?	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-43	STATEMENT OF McDONALD LAW	
A-43-01	MR. LAW: Okay. My statement will be brief. I am McDonald Law. I live at 1023 Westin Drive in Aiken. I'm an architect in private practice, and have no family members working near the Savannah River Site. As a student, I was opposed to the war in Vietnam and the way it was fought. And I was then, and am now, concerned about our stewardship of the environment, the only one that we have. I do, however, wish to speak in favor of the restart of reactors K, L and P at the SRS as soon as possible, within existing guidelines, as outlined in the EIS. Until mankind's basic natural changes, there will always be a need for force in our society and in the community of nations. As terrible as nuclear weapons are, they have performed the service for which they were ideally intended: maintaining peaceful coexistence between sometimes unfriendly nations. Concerns for the environment as well, particularly air quality, require that nuclear technology not be abandoned, but be continually improved as a biologically safe alternative energy source in the future. I want to thank you for this opportunity to express our views.	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-44	STATEMENT OF TRACY TARLETON	
	MS. TARLETON: I'm Tracy Tarleton. I'm a resident of Aiker County. And first of all, I want to say that our family's income does not come from SRS.	
A-44-01	We're making some very important decisions here, and it's certainly good to be here. I have listened to the Mayor and other people, and I've listened to their opinions and am considerate of them. But if you had a refrigerator full of food, you wouldn't go out to a store and buy more food. And if you see that we already have enough for a war, why should we build more? It's not right. I'm very upset, and I'm scared for what's going to happen; one minor slip-up, and we're just gone, you know. It just really scares me too bad, and I wish that we wouldn't start the reactors. Thank you.	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-45	STATEMENT OF ALBERT HODGE	
A-45-01	MR. HODGE: Good afternoon. I'm Al Hodge. I'm the President of the Metro Augusta Chamber of Commerce, and I am pleased to be here this afternoon in support of Westinghouse Savannah River Company and the Department of Energy. It is our feeling that the United States continues to need defense, it continues to need the tritium which is produced here. We look forward to the restart and to the new reactor. It is our feeling that improvements have been made in management technology in recent years, and that's continued to be, including here at the Savannah River Site. It was interesting to note that the Department of Energy Tiger Team assessment that was very recently completed — it's my understanding that that's a very thorough and rigorous process — that they identified no conditions warranting interruption of the current operations and no environmental conditions onsite presenting undue risk to public health. I really feel that in terms of our nation and its leadership role in having sessions such as today, focused hearing where folks can come and speak for or against, depending on their personal choice, is something that we value and should continue to value very highly. Westinghouse is but one of many examples of why we're able to do that. Certainly, the economic benefits and the economic development implications are very important, not only to the local community, but to South Carolina and Georgia as well. We have found Westinghouse to be very open and very good for our citizens, and certainly seem to be, at least at this point, and we have no reason to believe that this will change to the negative, and continue to be good for our citizens in terms of their very important and valuable role in our nation's defense. Thank you very much.	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-46	STATEMENT OF PAUL BLOWERS	
	STATEMENT IN SUPPORT OF CONTINUANCE TO OPERATE K, L, AND P REACTORS AT THE SAVANNAH RIVER SITE	
A-46-01	I am Paul Blowers, President of Aiken Technical College, Aiken, South Carolina and a concerned and responsible citizen. I would like to comment on Environmental Impact Statement - Continued Operation of K-, L-, and P-Reactors at SRS. I have reviewed the options considered by the Department of Energy and concur with the proposed action which is alternative 1, Continued Operation of K-, L-, and P-Reactors. I support these conclusions because I believe that the alternative is the safest, most effective, and most economically efficient way of building and maintaining the United States stock pile of nuclear weapons. The facility operated by the world's most experienced nuclear facility operator, Westinghouse, and their highly professional and technical staff is considered to be a key reason for my support. From my perspective, the only question which has ever been open is where should our nuclear weapons components be produced, and one of these locations has been decided to be at SRS. There is no question in the majority of American's minds that we must have a strong ready nuclear deterrent to the nation aggressors in this world. For the past 45 years, the main aggressor has been the Soviet Union. They continue to have a powerful nuclear force operating in a one party dictatorship without the democratic controls that we have in the United States. The history of the Soviet Union since its inception after its revolution has been of dictatorship. History repeats itself. The current verbal position of the new dictator, Gorbachev, where he professes a desire for reduction of world nuclear armaments has not been followed by action. The Soviet Union still has massive conventional arms superiority over the United States. Until there is actual elimination of nuclear arms in the Soviet Union, the United States must remain strong in nuclear deterrence. In addition, Gorbachev could be a temporary figure and be replaced by the type of leader like Breznev, Stalin and Krushchev.	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	The United States suffered in World War II because we unilaterally disarmed after World War I. We saw the results in the Korean Conflict and Viet Nam because we did not have the power to deter those aggressor nations after World War II. We saw weakness after Vietnam because of lack of will to confront aggressor nations. Only during the 80's has the United States had a military deterrent, based upon massive nuclear retaliation, which has maintained the peace for our U.S. citizens. Based upon these national defense considerations, we must maintain our nuclear defense production capabilities. The three reactors start-up will fulfill this very important mission of supplying tritium and plutonium 238 for nuclear material production requirements.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-47	STATEMENT OF SINKLER WARLEY, JR.	
A-47-01	MR. WARLEY: Hi. My name is Sinkler Warley, Jr. I'm originally from Charleston. I was born in Charleston, South Carolina, and my family and I reside here. I'm married and have one 12-year-old son who's attending this with me today. We reside 50 miles from here, over in the southern Georgia area. I grew up in Charleston, in Orangeburg, in Lint. I do not have a Ph.D. or a master's but I have a B.S. degree from the U.S. Naval Academy. I believe in God, family and country, in that order. I believe in a strong defense. I believe also that this madness must stop. There's no excuse — even national security — to carry on killing your own people. And it is my opinion that the air pollution in this state — we are the 16th highest air-polluted state in the nation. We have more air pollution in this state than either Massachusetts or New Jersey. That excludes the automobile pollution. Hundreds of automobiles are being sold every week. We are adding carbon dioxide and carbon monoxide gases to this air pollution. How about our sister states, adjacent states? If we're the 16th most air-polluted state in the nation, how about Tennessee, No. 4? One hundred thirty-four million pounds of toxic chemicals were released in one year only, in 1987. How about Virginia, where I have a lot of classmates and friends, No. 5 in the whole United States? One hundred and thirty-two million pounds of toxic chemicals released into the air in one year alone. How about Alabama, No. 9 most air-polluted state in the nation? Ninety-seven million pounds of toxic chemicals released into the air in one year alone. How about North Carolina? Ninety-four million pounds of toxic chemicals released in that area in one year alone. How about Georgia? Jimmy Carter's last sister just died of cancer; I think that the entire family now is just going to cancer. No. 11, 93 million pounds of toxic chemicals. When is the madness going to stop? Just last summer, I advised a girl from James Island that I had testified here a year or two years ago against restarting these nuclear reactors; they're 30 years old. I don't want anyway in this state, any South Carolinians or anyway else to get hurt. Look what	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	Chernobyl did to Russia. The Russians are just as scared of the environment as we are. They are ready, for the first time in my lifetime of 54 years — we have a chance for peace, a real, genuine peace with these people currently in shambles. They are going to get in the ball game with us.	
	This girl from James Island had just come back from Texas where the air pollution, she said, was awful. I advised her that Texas is the No. 1 most air-polluted state in the nation. These figures came from the industries to EPA: 332 million pounds of toxic chemicals released in their area, the majority from the technical chemical plants. Virginia, I've already covered.	
	Just a few weeks ago, I was on the beach, I was discussing the pollution problems in South Carolina. It makes me sick to see our water, our air and our land polluted in this state. When are we going to wake up? Those of you who have got children and grandchildren, don't you want them to survive? I want to see my 12-year-old grow up healthy.	
A-47-02	Just a few weeks ago, a guy from the Savannah River Plant said that the plant was releasing tritium gas, a killer. He went to a hearing over here in Aiken with some of the fellows who work at SRP. I said, "What is the problem? Have they got drug problems in there or what? What's wrong over there with this tritium gas released?" He said, "They don't care. The guys told me that they just don't give a darn; they want all their paychecks, and the heck with them." Have we gotten to that point? The thing that has made this country great is that we care about one another, don't we?	Section 3.7.1.2 of the EIS discusses atmospheric tritium releases and offsite doses from 1954 to 1989.
	How about these guys on the 11 to seven shift, or the 12 to eight, or whatever? My gosh, they should be watching for these leaks, for these things. Admiral Watkins has found, what, 79 different problems since he's been investigating this thing? I hope that he walks tall or that somebody does. Anyhow, the guy said that the killer chemicals were there and he didn't even touch them. They wanted the nuclear detection to go over it.	
	We had to get out of Orangeburg because they're making ibuprofen. What is ibuprofen? It's got toxic chemicals, a benzene ring. It pollutes up to 75 miles of this state. We've got a state of chemical plants. We've got sulfur oxides coming from the utility plants. Where are we going to stop on this?	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	We moved away to get away from the chemical plant in Orangeburg; what did we find out? That the Westinghouse plant at Hampton is the most air-polluted plant in the whole US — 13 million pounds of toxic chemicals released in one year alone. The poor lady who testified in Savannah the other day said that they were going to build 635 acres more. She's more scared of SRS than she ever is of her house burning. In the meantime, what have they got besides this plant burning and this medical race? Then, the second cement plant is going to burn hazardous fuel wastes, all these fuels — what do they put in there? PCBs, dioxins — you name it; it's there; we're going to breathe it. Do you think that you're exempt here in Aiken? No, sir. That stuff's going to travel 75 miles, and you're going to breathe it, and your children are going to breathe it also. I want to express that air pollution causes irritability, allergies, asthma, bronchitis, cancer — you name it, it causes it. The restart of the reactors would be a red flag to the world that we've got a chance of something that we've never had before with Russia. The way I figure it, just common sense-wise; I don't have to be interested in a thing. I would like to see 300 square miles of that nuclear waste cleaned up. Next year, the same employees who have been causing this pollution could clean it up. Take your paychecks. But, I'd like to see my family survive; for the first time in my 54 years, I am concerned for my family and for their very survival. Thank you very much.	Please see the response to Comment A-09-02 on waste management and environmental restoration.

C-928

A-47-03

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-48	STATEMENT OF BARBARA L. RUSTAD	
A-48-01	The groups represented by most of the people in the audience have gone to a lot of effort to publicize the fact that Savannah River Site releases radiation into the environment. What they haven't publicized is the fact that ours is a radioactive universe. Radiation is as common and as natural as gravity. The day-to-day activities at SRS are not going to significantly alter the amount of radiation you and I receive. Even if they released ten times their estimate, it still would be less than the additional exposure I received for the first 34 years of life, living in Colorado at an altitude of 5200 feet. I don't mean to minimize the potentially harmful effects of radioactive materials. But inside the reactor areas, as well as throughout the site, radiation is constantly measured and monitored; individual exposure is kept well below the minimum considered safe. In the event of unusual circumstances, the reactors and the operational procedures which support them are designed to shut the reactors down. If we learned anything from Three Mile Island, we learned that in an accident, a reactor can be shut down safely, without loss of life or serious injury. A lot of people are saying that we no longer need to produce tritium, because we no longer need nuclear weapons. A little blip of Glasnost in Eastern Europe must not be construed as the end of military aggression throughout the world. We should never design our national defenses solely for the political atmosphere of the moment. History has already shown that the United States can maintain a strong defense without taking on the role of an aggressor. Those peaceful nations which are not as strong militarily may once again call on the U.S. to defend them from other less peace-loving nations. It is our responsibility as human beings to be there when they need us. In conclusion, I would like to say that I have full confidence that Westinghouse and the Department of Energy can operate the reactors safely, and that they are fulfilling an important and worthwhile function. The reactors should be restarted.	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-49	STATEMENT OF CRAIG SCHENCK	
A-49-01	Hi. I'm Craig Schenck. I live here in Aiken, in the city of Aiken, by choice. I run a small business here, by choice. I can move this business very easily to anywhere in the country; it's mobile. I'm glad that there are people around here like Greenpeace to watch SRS. I think that they're able to come here and speak out because SRS and the materials that it makes have kept us free. I wish that there was no need for these materials, these weapons, but I know that there is. I want to be free. I want to be able to come here and speak my mind, and I believe that the weapons that are produced from these materials help me to be free. I say to SRS, "Continue to do a good job." I say to Greenpeace, "Watch them closely." Thank you.	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-50	STATEMENT OF ELVIRA THOMPSON	
	My name is Elvira Thompson. I want to say that first, after hearing one of the gentlemen who spoke before, that I'm a housewife and not a professional agitator. If I'm a professional agitator — if whatever his name was might have been identified me as one, then, he would have to identify everyone as one.	
	My message is that America needs to be free, but it seems that our worst enemies are politicians. They even pass the water that we drink, and most of it is polluted. The SRP reactor restart would cost us more, not only in taxes, but in our lives, because when you play with fire, you will get burnt. But this is not just fire; it's a volcano that no man can control, and the apathy of most of the countrymen will be the cause of the next holocaust.	
	Just think, disasters come in chains, and more so every year. Natural disasters are increasing because we have changed the environment. We have permitted our air, land and seas to be polluted in the name of the almighty dollar. I'm only trying to quote what's on the Lincoln: "In God we trust." We'd better trust in God because we cannot trust our government.	
	But, people want to live, and some of them want to change things. And our government, from the President to the last county council person, will hear our voices. Even as a minority, we will not keep silent anymore; at least, not me.	
	I became an American citizen 24 years ago, longer than I lived in the country of my birth, and I did it because I wanted to be an American and because my family were Americans, born in the U.S. for a generation — my husband's family. Even the majority of my family are and were Americans.	
	And by God, I say to America, "Promote peace, not war." Teach children to read so that they can read a geiger counter; teach them to test our drinking waters for contamination. They need to know because you, our government, are the biggest polluters in the world. And teach them how to kill themselves when the keepers of our land, you that represent our government, come into our bodies with radiation and turn into walking boxes of pain. You who don't	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-50-01	have enough with 24,000 nuclear bombs, like the Air Force pilot last Tuesday evening in Columbia — 24,000 nuclear bombs are not enough to kill that Big Bear. It might be a hell of a big bear. I think that our government has made a very unfriendly strike ratio because they don't give a damn about us. If you go to the movies and see "ET," you would learn something — love and compassion. But I guess that if you can always feed us bombs, there will be plenty. Or use the extras in the "Night of the Living Dead" movie series and sell the rights to the world so that they can use the profits to make more bombs. But, I say, "No more nuclear weapons." The U.S. Government, including the President, has no way or means to clean the SRP reactors after a meltdown. Just think of Chernobyl. Our government cannot control the safety in such institutions or the drug traffic in our streets and homes. Our government can't save two whales in Alaska. Our government cannot help save the American farmers. Our government cannot control Exxon and the oil slick that even today is contaminating our seas and killing sea lions. And our government cannot prevent a nuclear accident at the Savannah River reactors. No more nuclear weapons. Please leave us and future generations a beautiful America. We want protection from our government. We don't want excuses from our Senators; we don't want excuses from our Representatives. We demand a government for the people, by the people, and we, the people, say, "Give us a break. No more nuclear weapons." I recommend that those in favor go to Hiroshima and Nagasaki, as I have — I lived in Japan for over four years — and see the people that have been exposed to nuclear bombs. It's not a very pretty sight, their children — not physically or psychologically. And I want to be on the record as opposing the restart of the K-, L- and P-Reactors, and I would like a copy of this hearing transcript. You have my address. Thank you very much.	The need for nuclear weapons is beyond the scope of this EIS.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-51	STATEMENT OF DR. ALBERT JABS	
	Yes, I'm Dr. Albert Jabs, Director of Lutheran Human Relations, associate professor, writer and researcher, as well as a family man and a member of the Lutheran Church. My friends, it seems to me that with all of the things that have been discussed, I'm not going to pretend to be an expert on radioactivity, but I know something about history; I know something about ethics. I have one doctorate and the equivalent of another one. I don't want to drag out these credentials, but I publish about 280 articles on questions of history, ethics, law, war and peace. It seems to me, after looking at the discussion today, that we have questions of principle versus power, questions of principle versus power. The first four speakers this morning were unilaterally in favor of starting up. Then, we heard a dissenting community from the scientific community, giving their reasons why it should not be started up. For those of us who just had Chemistry 101, it's difficult for us to really understand a Ph.D. in physics, but we hear their arguments. But I know something about history; I know something about people who are at risk. I get along; I greet Mr. Patterson and other members of the program cordially. We are part of a community, first and finally. And as we differ, it's only in a sense of finding the truth.	
A-51-01	All I can say is that one of the questions that came up here today is, is tritium really necessary? I know we cannot oversimplify history. A man from Aiken Tech spoke about World War II, the Vietnam War, the Korean War. I want to tell this gentleman that history gives multiple reasons for causes and consequences. You cannot simplify and say simply that even is one side. Edmund Burke — and I don't want to drag out history and sound intellectual, but evil is never always on one side. We have to learn that from history. We have to stand with our country, but we know that there is a mixture. All we have to do is talk about Lieutenant Callee and Me Lei; not all of our troops over there were sadists. We know that that massacre occurred; I was a soldier	Please see the response to Comment A-06-01 on the need for tritium.

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response

myself. There are always some rotten apples in every barrel, so, we have to be careful about "sloganizing" and generalizing and stereotyping.

What are we to think? Sakharov, father of the hydrogen bomb, says that we have to ensure safety, that the debate that he has with Solzhenitzeyn — two great thinkers of our present era — Sakharov says, "Make sure that you people are safe in what you are doing." Why? Because community should be crucial; this should be our primary priority.

Now, the national news media tells us that these errors occur right here in town, at the Savannah River Plant — and I'm speaking as a citizen of South Carolina. Why the coverup? Why must I read in Time magazine on the coverup of these errors? This means that there is collusion; it sounds like the Watergate in the scientific community; something is wrong. If a politician gets up in front of us and says, "Everything's all right," he's not serving truth; he may be serving just those who are in power. All of here must have a commitment to the community.

That man, a graduate of the Naval Academy, who spoke the way that he spoke — that showed courage of the soul. That's what he learned at the Naval Academy. My friend, Mr. Muller, pilot in World War II, would raise questions about the integrity of what is going on. Here are people who serve their country, but they have the soul to say that our country is wrong. Let us say it, and let's move ahead.

Let us take this opportunity to move for peace, which is our primary responsibility in building the community; not in a Pollyanna-ish way — we know that there are problems out there, but if we have enough tritium to deal with our national security interests, then, let us use this tritium rather than build this excessive amount of weapons which serves absolute security, which is impossible. Do you know what that is? The good brother who wore a clerical cloth should have called it — idolatry; thou shall have no other Gods before me, which means that if I put ultimate trust and security in any system, I go down. It happened in Egypt; it happened throughout history. I don't want to come across as a religious kind of person, but I know, as a student of history, whether it's the 17-year-olds who are sitting in front or whether

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	it's the 70-year-old gentlemen who speak about the necessity of serving the community, I think that they have captured the truth of the statement.	
	And so, we need to ask questions. I'm going to go away from this meeting, asking the question, "Who is right?" With all this evidence, who is right in the scientific community? A man sitting right over there says that since 1952, he was involved in a hydrogen project, and says over here that everything's all right. Well, that's like the man reporting to the plantation. Everything is not all right; it depends upon where your vested interests are; who are you serving? If I'm worried about my job, if I'm worried about election to public office, if I'm worried about the security of my role in life, I'm going to compromise truth.	
	What we need in this country are Sakharovs and Solzhenitzeyns who say that we are guilty of self-indulgence, permissiveness, and we need to have national security, of course, but let us not serve our national security and establish this as some kind of national idol, because the strength of this country is the central allegiance to integrity. This is based on our constitutional system. Never mind what the Senators or the Congressmen say; are we serving integrity? Are we serving truth? Do we have an allegiance to build the community? That's the strength of this country, and that's going to be the strength of whether we're going to get into the next century or not.	
	Gentlemen, I stand there.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-52	STATEMENT OF FRED MULLER 411 HARDEN STREET COLUMBIA, SOUTH CAROLINA 29205	
A-52-01	My name is Fred Muller. I just speak for myself; I'm just an American citizen. Other men have stated their credentials; I would like to state mine. I was the youngest B26 pilot in World War II. I went completely around the world. I picked up a B-25 brand new in Savannah, Georgia, flew it down through Central America to Brazil, across the Atlantic to Africa, across North Africa into Burma. I went into World War II from Clemson. I was a teenager, a happy boy. I came back from World War II an old man; the foolishness had been shot out of me. I have been in more airplane crashes than I have been in automobile wrecks, and I was a traveling salesman and drove over a million and a quarter miles. I have traveled every state in the United States except Oregon and Maine. I know this country, backwards and forwards. We won World War II. We stalemated Korea. We lost Vietnam. America can slap around Grenada and Panama, but as for as going back to Europe with 10 million men and saving Europe — that day is gone. The atomic bomb and the hydrogen bombs are the greatest peace weapons ever invented. Most wars in history have been started by old men who sent young men off to die. Witness Khomeni, Hussein and the Iran-Iraq War. I do not know what will happen in Moscow if World War III comes, for I have never been there. But I know what will happen in Washington, D.C. The first thing to go will be the White House. The second thing to go will be the Pentagon. The third thing to go will be the CIA. And then, Washington, D.C. will be turned into a solid sea of molten glass. It might be good riddance, I don't know. But, right behind that is going to be Fort Jackson and the Savannah River Plant, and God knows what will happen. Those of you who have never been in a war do not know what war is. Sherman put it right when he said, "War is hell"; it is hell. I've been with some of the finest young men that you ever saw in your life in India and Pakistan. Some of them were never found; they just disappeared in the jungle in Macau.	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response

Don't think for one moment that our country has been the greatest preserver of peace in the world. America is aggressive. We push hard. If you don't think so, just go out in the rest of the world and look around. President Eisenhower warned this country when he was leaving office about the giant military industrial complex that was building in this country. It is a \$300 billion a year complex, and it is running wide open. And Westinghouse and DuPont are right up front. Don't think for one minute that they are interested in just your community. Aiken is a beautiful town, among one of the prettiest in the world. So was Chernobyl before the meltdown and explosion.

For engineers to build a nuclear power Plant in the middle of a river at Three Mile Island shows the arrogance — complete arrogance — of nuclear physicists and engineers. All of the nuclear Plants in America have to be built over a giant aquifer, which is water circulating in the earth, or next to some source of water — principally, a river, a lake or reservoir. Underneath this building, at a 600-foot depth, runs the Tuscaloosa aquifer. The day that contamination from Savannah River reaches that water, Aiken will die; so will Augusta; so will South Carolina; so will south Alabama; so will western Florida; and so will Mobile, Alabama. There will be nothing that can live there. Almost all of the cities use deep wells for water.

Water circulates in the earth, just like blood does in your body. If you cut your finger, you bleed. If you cut your head, you bleed. If you cut your nose, you bleed. The same with water. That's why welders say, "We struck a plane of water" — that's what they mean. If it's not big enough, they go deeper or they go to another Site. They struck water on top of Seton Head — nothing but pure granite. There's water on top of the Rocky Mountains. There's water on top of the Himalaya Mountains. There's water in the Sahara Desert, if you can find it.

Man has lived many times in civilization. He always managed from the same face of the earth when he polluted or lost his water supply. You can breathe the radioactive air and live a little while, but drinking radioactive water is guaranteed death, and it ain't long coming, baby.

That's about all that I have to say. I just have this letter that I wrote to President Bush. I sent that letter to every member

The Tuscaloosa aquifer, now called the Black Creek-Middendorf Formation in South Carolina, discharges to the Savannah River in the vicinity of SRS, as described in Section 3.4.2 of the EIS. This aquifer is not believed to be hydraulically continuous with the formation of the same name in Georgia and other states. It is 400 to 900 feet below the surface of SRS and is generally protected by several impermeable clay or other lithologic formations. SRS has installed monitoring wells in the aquifer to detect any type of contamination that occurs. During the approximately 35-year SRS operating period, no radioactive contamination has been detected in the Black Creek-Middendorf aquifer as a result of past operations, and none is expected from continuing reactor operation. (Please see the EIS on Waste Management for Groundwater Protection, DOE/EIS-0120).

C-937

A-52-02

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	of Congress, every Governor and his wife; I sent it to 1,000 Chief Executive Officers of giant corporations, including Westinghouse and DuPont, personally, by me. I received letters from Senators, Governors, powerful men — but not one letter came from a corporation. Thank you. [Mr. Muller's letter to President Bush is presented below. DOE has not responded to this letter.]	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	February 20, 1990 President George Bush 1600 Pennsylvania Avenue The White House Washington, D.C. Dear Mr. President, Mikhail Gorbachev is not only a powerful man, but he is also very smart and decisive. On April 26, 1986 Chernobyl exploded and melted down. After he and other Russian leaders surveyed the death and destruction, Gorbachev stopped in mid-air, the construction of five Nuclear Power plants, plus he stopped the production of Plutonium and U-235 from which military weapons are made. He withdrew four older Nuclear Submarines from the Baltic Seas and evacuated 235,000 Russians from an 18 mile radius of the Chernobyl Complex. He is now considering removing 110,000 people from a 10 miles more radius. Before and after Chernobyl, the Russian Government has lied to her people and the world. Actions speak louder than words. Great civilizations have existed before in history. They all vanished when they polluted or lost their water supply. You can breathe radio-active air and live, but drinking radio-active water is guaranteed death. Water circulates and percolates in the earth just like blood in the human body. The American Government has lied and is still lying to the American people about the dangers of Nuclear power. The Department of Energy is worse than worthless. It has not made one concrete decision nor permanently disposed of one ounce of radio-active waste material. Within 125 miles of my home are 5 Nuclear Power plants and the Savannah River Bomb Plant at Aiken, S.C. where sits 35,000,000 gallons of highly toxic radio-active waste in concrete vats on top of the giant Tuscaloosa aquifer that runs at only 600 foot depth and waters the Southeast. Should God send an earthquake and dump this waste into this Aquifer, then South Georgia, South Alabama, West Florida and Mobile would become a giant waste-land just like Chernobyl. The Nuclear plant at Rocky Flats, Colorado, sits on top of the giant Goude Aquifer that waters Colorado and West Texas. Should a	

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response

disaster strike there, then Denver, Amarillo, Lubbock, Midland Odessa would become the five largest ghost towns in the history of the world. The Permian basin would vanish with our oil supply. Acid rain has not killed anyone, yet, but nuclear melt-downs and radiation have killed thousands and will warp and kill millions before man wakes up.

The Russians have seen nothing yet. Just wait until cancer and melting hip bones really begin occurring, especially among their little children. Americans can sit fat, dumb and happy until catastrophe strikes. Then we will wake up with a roar! I had a friend who was at Eniwetok in a bunker behind ten feet of solid concrete. His hip bones melted before he was forty. The Veterans Administration installed plastic hip bones. He never saw forty-five. He lived and died in a Hell of alcohol and pain.

You do not have to bomb a Nuclear Power Plant to have a melt-down. All you have to do is kill the technicians who run it. A meltdown is then automatic. We have 110 Nuclear Power Plants plus 17 military operations. They all sit on top of giant Aquifers or near a large water supply for cooling purposes. It is only a matter of time until America experiences her own Chernobyl. France, with her proliferation of Nuclear Power Plants could easily have a series of domino-effect meltdowns and probably take Belgium and Holland with her as she goes into oblivion.

It is these very Nuclear Power Plants that have eliminated the possibility of any large-scale war in Europe or almost anywhere. In fact, you might consider the course Russia has taken and shut down the entire American Nuclear operation; both power plants and the military. Russia never was coming to America. For What? To contract AID'S and take it back to Russia by the millions? I do not think so. Are we going to send 10 million fine young men to defend NATO and leave addicts, criminals and drug pushers to run our country? I do not think so!

I was a B-25 and A-26 pilot in World War II doing low level work and skip bombing in India and Burma. Immediately at the end of the war, my government sent me to China to be a co-pilot on C-46 and C-47 Transport planes. We flew night and day hauling the National Army to take over from Japanese before the Communist could walk there. When I arrived in Kunming, China printed money. Two months

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	later when I arrived in Wuhan, China printed paper. In December, when I arrived in Shanghai, China printed trash! When the money collapsed, China collapsed! I saw China fall! The Communists did not <u>conquer</u> China. They just walked in and took over.	
	Communism is not all bad, if it replaces despotism as it did in China. Chiang-Kai Shek and his crowd had raped and robbed China until she was gone. I do not know what happened in the Russian Revolution as I had not been born.(1917)	
	President Reagan used the threat of Communism to run a tremendous deficit and creat the illusion of prosperity. He left you a terrible debt structure and legacy. Good luck!	
	Mr. President, there are two irrevocable laws on this earth: You cannot drink yourself sober and you cannot borrow your way to solvency. The longer either continues, the more terrible the hangover. We came out of World War II almost without a scar, except for the dead and wounded. We were <u>the</u> nation on earth. Even Germany, Italy and Japan have passed us on their road up, as we ride the road down to <u>Sixth</u> place in average income. At the end of World War II, America was the richest nation on earth and largest creditor. Today, we are the largest <u>DEBTOR</u> and owe more money than all nations on earth. Only a fool thinks we are going to pay off our national debt. No drunk has ever sobered up as long as alcohol was free. Neither has any economic drunk sobered up as long as fools let him sign I.O.U's. We are the same.	
	Junk bonds and white collar crooks make the Wall Street Journal read like the Police Gazette. What a laugh! Tomorrow, our government bonds will be on the same page. JUNK BONDS—LIKE CHINA—PAPER TRASH!	
	The world has entered an era of economic warfare from which there is no military relief. All major economic powers are exporting against other major economic powers. Russia must come with a gold backed Ruble if she is to enter world commerce and trade.	
	Mr. President, I write you this letter because Mr. Gorbachev did not make his decisions for the love of the world, he made his decision for the love of his country, Russia. I write this letter not because I love the world, but also, because I love my country, AMERICA!	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	You know that my views are the views of millions of concerned Americans, and you know that dramatic action is needed NOW if the United States of America is going to halt its headlong plunge into the mediocrity of debtor nations and the danger of the headlong rush into nuclear stockpiling. Gorbachev is making a dramatic effort to solve some of the problems of the USSR. You can do no less for the USA. There is no more time to play politics. There is no more time to play out a Presidential term and leave it in the hands of the next fellow. There is NO MORE TIME! Respectfully yours, Fred Muller <u>COPIES SENT TO THE FOLLOWING:</u> U.S. Congress: Full House and Senate All fifty Governors and Spouses Chairman Mikhail Gorbachev Foreign Minister Eduard Shvardnadze National Leaders Worldwide All Foreign Ambassadors (167) CEO—Top 1000 Corporations The Editor of America's 100 largest newspapers	

C-942

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response

U.S. Agency Reportedly May Purchase Soviet Uranium-Enrichment Services

By JERRY J. FALKE

Staff Reporter of THE WALL STREET JOURNAL
WASHINGTON — The Energy Department reportedly is considering buying uranium-enrichment services from the Soviet Union as part of an arrangement designed to stop the Soviets from undercutting the U.S. in the lucrative business.

A spokesman for the department refused to confirm or deny reports circulating on Capitol Hill and within the nuclear industry about a pending deal. The spokesman would say only that the department is considering a "range of alternatives" to make it more competitive in the uranium-enrichment business.

The U.S. currently is the world's largest supplier of uranium-enrichment services, deriving \$1.5 billion annually from selling the services to nuclear utilities in the U.S. and abroad, according to the Energy Department. But two years ago, V.O. Technoexport, the Soviet agency that markets uranium-enrichment services, began cutting into the U.S. market, selling its services at less than half those charged by the department.

Under one version of a U.S.-Soviet deal being discussed, the department would buy cheaper Soviet fast-enrichment services and resell them to its customers. The Soviets, in turn, would refrain from underpricing the department in the U.S.

Such an arrangement would give the Soviets hard currency and official access into the U.S. market, in turn making political attempts here to ban their cheaper services more difficult. At the same time, the ability to resell the cheaper Soviet services would give the Energy Department a way to keep some of its long-term customers, while retaining control over the portion of the U.S. market going to the Soviets.

During the past several months, three of the Energy Department's biggest customers, including the Tennessee Valley Authority, have announced that they are terminating some of their long-term contracts.

The TVA announced earlier this year that it is leaving providers other than the Energy Department to bid on supplying fuel for its nuclear power plants. Bob Cole, manager of nuclear fuel for TVA, said that the huge, federally owned power complex also is considering buying some cheaper enrichment services on the spot market. "The Soviets are the market maker today," he noted.

The first glimmer of a possible U.S.-Soviet deal came from New York Nuclear Corp., a tiny nuclear brokerage firm operated from a home in Kew-Forest, N.Y. "It's sort of a win-win situation for everybody involved," asserted Daniel Elshand, vice president of the concern.

Mr. Elshand said the firm presented the idea to Soviet officials in Moscow in December and received a letter of interest.

It then took the letter to the Energy Department. "DOE wanted information about many details, including transportation and what they are going to do with the money," Mr. Elshand said.

According to Mr. Elshand, the Soviets agreed to spend money they receive from the potential \$200 million deal on products and equipment in the U.S. At that point, he said, he was told the proposal had risen "to very, very high levels in Washington and Moscow."

The hardest evidence that the Energy Department is considering a departure from its old ways arrived on Capitol Hill last month. The department submitted a one-line budget proposal that would allow it to buy uranium on the world spot market, which is dominated by Technoexport. The proposal—first reported by Nuclear Fuel, a newsletter published by McGraw-Hill—immediately set off runarounds on Capitol Hill.

"If I read between the lines, I think we are about to enter into an agreement with the Soviet Union," Sen. Pete Domenici (R., N.M.) told William H. Young, the Energy Department's assistant secretary for nuclear energy. Mr. Young replied only that the department was concerned about growing Soviet sales and was looking at "a range of alternatives" to shore up its market.

To ease concerns on Capitol Hill, according to Mr. Elshand, the deal would allow aging U.S. enrichment plants at Paducah, Ky., and Portsmouth, Ohio, to keep operating, although they are believed to be much more expensive to run than newer Soviet plants, which use high-speed centrifuges. The Soviets, he said, would agree to use uranium mined in the U.S. as a feedstock.

Uranium enrichment is an elaborate process that turns natural uranium into a gaseous compound and then restructures it so that an unstable isotope, or rare chemical relative of uranium—called U-235—becomes more concentrated.

The U.S. enrichment program began during World War II as part of the country's nuclear-weapon program. After the war, the U.S. enriched most of its uranium-enrichment capability to providing fuel for the then-growing nuclear power industry. For two decades, the U.S. government enjoyed a near-monopoly on the enrichment business in the non-Communist world.

While both U.S. and Soviet uranium-enrichment facilities were originally designed to provide highly enriched uranium for atomic bombs, both countries later switched to a different metal, plutonium, for their nuclear arsenals. Plutonium is derived from a different process.

The major remaining military need for enriched uranium is for fuel for nuclear submarines and ships. According to the Energy Department, 10% of U.S. output is used for military purposes.

May 21, 1990 HST

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-53	STATEMENT OF DOUG SHOEMAKER	
A-53-01	My name is Doug Shoemaker, and I'm going to represent myself. Hello, again, everybody. I'm dressed up like the Mad Hatter today from Lewis Carroll's <u>Alice in Wonderland</u> because for the Mad Hatter, time had perpetually stopped at six o'clock, tea time. And so, he was always sitting around the table, having tea. Here we are in Wonderland. The Federal government attempts to stop the clock somewhere around 1954, when the Red Communist plague is about to swallow us all up, and we're all going to live in Siberia forever. And what the Department of Energy is announcing specifically with this draft Environmental Impact Statement is that they are trying to stop time at January 19, 1989. It's June 8, 1990, and a lot's happened since January 19, 1989, Mr. Patterson. The world's changing, and change is inevitable, and it's going to keep on happening, no matter what you all do. Let me tell you a little bit about myself. And so much for symbolism. When I got out of high school, the first business that I went into was selling fabric so that people could sew their own clothes. People don't do that anywhere; that's progress. If you're wearing handmade clothes out there today, are you a Communist? I didn't have a living; I had to do something else, and I became a carpenter. And I'm a good carpenter. But you know, people don't always want rooms built on their houses. That's tied to the economy. It's an up-and-down type of job. And I just got to the point where I couldn't deal with it anywhere. I couldn't deal with being rich one week and broke the next week. Now, I guess that I'm a professional peace activist, if you want to say that, and I'm not getting rich. In fact, I'm getting very, very poor. And so, I'm saying to you people here in Aiken, South Carolina, "You got this reactor back in the fifties because that was progress. Nuclear weapons were necessary evil. Well, now, progress it toward peace." I don't want to give your jobs away, but it's becoming unnecessary, and you've got to find something else to do. And if you can't find something else to do, you have my pity, because you've got to straighten up and do something besides making radioactive waste and burying it.	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response

And inevitably, it pollutes the aquifer. And it may not affect this generation, and it may not affect the next generation, but it's going to be around for hundreds and hundreds and hundreds of thousands of years. And there's no way that we can stop it. The greatest scientist in the world doesn't know how to stop it. I'm not afraid of nuclear exchange; I'm not even afraid of the Savannah River Plant blowing up. I'm afraid of business as usual at the Savannah River Plant.

This is a moral question. There are not statistics, there's no need, there's no proof. The Environmental Impact Statement is for national security. I want this year end to specifically address the fact that producing more tritium at this point in our history will lead to promoting international insecurity, both by making the Soviet Union feel more threatened, when they're already in a defensive position. How much more defensive can you get before you just react?

And number two, if 24,000 nuclear weapons are necessary for our national security, will we definitely have a moral obligation to export 24,000 weapons to every country on the planet? That will make everybody secure; nobody will fight anybody; the whole world will be at peace. It'll be at peace because the whole world will be radioactive, and everybody will be dead, and that's the best way to make this country secure. Does anyone want to take over Libya? No, because they're on a desert. And that's what the Department of Energy is trying to do, is make this country a desert.

I've been following you guys around to Savannah, and I've been jumping up and down and wearing a rubber skull mask and holding the signs, and I've followed you to Charleston, and I did the same thing, and now, I'm here. And it's hot, and I'm sweaty, and I'm tired. And do you know what I really want to do? I want to go home, and I want to be in my apartment, and I want to hug my girlfriend, and I want to pet my cat, and I want to feed my bird. But, I have a moral obligation to be here — not for me, not for you, but for 25 generations down the road. And I do believe in a Creator, and I think that we all will be judged ultimately. And I want you people to know that our souls — mine included — will not rest in peace beneath the crushing weight of the unborn. Thank you.

C-945

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-54	STATEMENT OF WARREN WHIPPLE	
A-54-01	Good afternoon. My name is Warren Whipple. I'm with Greenpeace Action. Mr. Patterson, Mr. Cumbee. I don't really have much to say. I've written four or five speeches for this afternoon and wound up throwing them all away. I know that it's been a long afternoon; it's been a long week. So, I'll be brief. I think that the only thing that I really want to say that hasn't been said — so much has been said so eloquently from so many people who have done so much and cared so much about this project — the only thing that I think is left that I would like to express is my really profound disappointment at what I have seen happening here. I came on this project at Greenpeace for two reasons. (1) My family in Sylvania, Georgia, about 20 miles downriver from the plant. In 1978, we suddenly lost my grandfather, who fished in that river every weekend. He was a very healthy guy. We lost him very quickly. (2) The other reason is that I grew up with spacecraft. My parents told me that I stood most of 1963 watching the space program. I remember when I was in elementary school, doing a huge science project with styrofoam balls and toothpicks, explaining the atomic reaction and how it worked. And I learned about the Department of Energy. The Department of Energy was the branch of government that was entrusted to take us into the 21st century. Its purpose was to develop, research and bring about the new forms of energy that would take up the slack and make up for the inadequacies of the types of energy that we had — coal, gas, things that obviously weren't going to make it. It was on the cutting edge. Because of the expertise that the DOE had, it was entrusted with the production of nuclear weapons and materials. This was for a twofold purpose, as I understand it: One was that they had the experts, they had the ability to pull off safely if anybody was going to. But the other reason was a very basic feeling that it was important to keep this aspect of our military and our civilian patterns. We could see what happened to other countries when military takes a power of its own, and it was	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	important that the Department of Defense not be itself in charge of the materials for these warheads. As well as production oversight of it, there was a watchdog emphasis as well.	
	I don't think that we can say that in the long run that you've done a horrible job. The Cold War was scary; I grew up in its shadow. But, it was better than a world war. The one thing that you have to give it is that it worked. Thirty years ago, you would not have convinced many average Americans that we would not wind in a war with the USSR — we didn't. We didn't have a Chernobyl. There have been leaks, there have been messes, there have been things that we probably still don't know about. But we haven't had a Chernobyl.	
	The citizens of Aiken and the Department of Energy can take some pride in that. We chose, for whatever reasons, to go into the Cold War and we survived it. But, it is over with. The only possible use for nuclear weapons is retaliation to prevent a first strike by the USSR. That's over, and you want to continue business as usual, and I don't understand. Mr. Patterson, we shouldn't have to be here. The Department of Energy should be telling the Department of Defense, "Why? What do you want this stuff for? Why do we have to do this?" Keeping them from running amuck is your job, particularly on its nuclear weapons, materials matters. You and he can't get a good bottle that no one else will touch. Everybody else wants you to put as much distance between themselves and this thing as they possibly can. The President won't touch it; Cheney won't touch it; Baker won't have anything to do with it. "Okay, SRP, can we wait to do it?" They're not going to touch it.	
	When I came in here, I thought a lot about the Department of Energy, how they wouldn't perceive, that they were going to do whatever they wanted to, regardless, how they were invincible. I don't believe that anymore. As I said in Columbia, I have felt this afternoon that you've been listening. I think that the Environmental Impact Statement is an embarrassment; I don't think that you're trying as hard as you could be, to the fullest. At first, I thought that maybe it was because you were screwing up.	
	Now, I wonder. I see the Department of Energy now as being stuck between a rock and a hard place. You are part of our weapons production commanded by the Chief Administrative Officer George	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	Bush. I believe that the DOE will think of the long-term and the future. I hope that somewhere, somehow, you've got the team that is all over this whole fusion thing. It didn't work, but it couldn't. I don't know what our future energy sources are going to be, but it's going to come from you. The Department of Energy is charged with the biggest responsibility that this country has, to survive, developing the means of energy that will take us into the 20th century and beyond.	
	I'd love to see you guys stand up. I'd love to see you guys go back to Washington and stand up and say, "Wait a minute." Somewhere, there's a charter for the Department of Energy. Somewhere, there's something that's written down there that says what your purpose is. Go back and read it. And go back and insist on being allowed to do it. Thank you.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-55	STATEMENT OF GREG RYBERG	
A-55-01	My name is Greg Ryberg and I am here to speak personally and on behalf of our company, R & H Maxxon Inc. which operates convenience stores in the greater Savannah River area. We whole heartedly endorse the restart of the Savannah River Site K, L, And P reactors. Since graduation from college I have lived with my wife and three children throughout the Midwest the past 14 years though we have lived in Aiken, S.C. No matter what area we lived in there was a common bond between our family and families,- that being, that we all strived to insure that the future of our area and this nation be protected for our children and all future generations. Protection not only applied to our basic freedoms but also to the environment. Every family that I have ever have associated with has this as part of its basic goals. In order to reassure the basic freedoms that we enjoy in the U.S. today, we must maintain a strong nuclear deterrent. Doing so does not have to be at the expense of safety or the environment. We have seen this over the past 40 years of operation at the Savannah River Site. There has not been <u>one</u> lost time work day to nuclear operations in that period of time. With the safety exhibited in past operations coupled with the extensive training and retraining done at the site, it is time to get on with it and restart the reactors. This morning I listened to a prayer for peace. I too pray for peace. When we pray we realize the need for peace but we also realize the need for protection. I also recall that the Ayatollah Khomeini, the great high priest of Iran, led a nation of prayer. They still pray in Iran with a primary goal being the overthrow of the freedoms of the Western world. Gobachev may preach glasnost but he does not speak for the Soviet Union forever. For that matter he does not speak for any of the other nations of the world. We have at the SRS the best engineers, scientists, technicians and support staff in this nation. They are capable professionals dedicated to the safety of the people and the environment of the area and the world. They are also committed to maintaining peace and the security of this nation.	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	It's time we get on with the protection of our future and restart the reactors under the safe guidance of DOE and Westinghouse.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-56	STATEMENT OF HENRY MCMASTER STATEMENT ON THE SAVANNAH RIVER SITE	
A-56-01	I have come here tonight to express support for the Savannah River Site. Now I know that some people say the Cold War is over, making the continued production of our weapons' systems obsolete. And, indeed, we have witnessed a great collapse of communism in the past year. I hope with all my heart that the changes taking place will be permanent and that in the future we will have no need for nuclear weapons. But that time hasn't come. We cannot be premature in our judgements. For while Gorbachev talks a good line, the Soviet Union has yet to dismantle any of its weapons systems. Given the remarkable instability in the Soviet Union during this time of upheaval, none of us can predict the future leadership of that nation, nor the course that arms production will take. So, in our own defense, we must proceed with adequate production. Savannah River is crucial to this goal. Since production must continue, I urge that a new production reactor also be built here. If we are to use nuclear power, then we must use it in a safe and conservative manner. The new production reactor, with all its state-of-the-art safety features, offers us a suitable way to use nuclear power. Finally, I'd like to say a few words about the future, about a time when the production of weapons may no longer be necessary. Will nuclear energy have a role? Of course, because it offers us the cleanest way to meet our energy needs. The safe production of energy has become one of the biggest challenges of our times. As our nation grows, we face the simultaneous task of expanding our energy supply and preserving our environment from pollution. Nuclear power is the answer to this challenge: safely done, it offers us an efficient and adequate source of power that is clean. And the Savannah River Site is the perfect location for the production of that power. For one thing, its huge size alone makes	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	it the safest place to produce nuclear energy in the Southeast. Moreover, the state-of-the-art waste disposal facilities located at SRS can handle all the waste produced here. For these reasons, I agree that a cluster of nuclear reactors should be built at the site so that the people of South Carolina can be supplied with the cheapest, safest energy possible.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-57	STATEMENT OF WILLIAM BOWMAN	
A-57-01	MR. BOWMAN: My name is William Bowman, and I am here to say, on behalf of Green Peace, that if these reactors are restarted and there are people and if one little leak should occur, they say, it is just a little leak. And if that little leak gets out, it is in the water, people are contaminated with it. And to make matters worse, if these reactors are restarted there is a fault land that runs right through Savannah River Plant. And if we should have a major earthquake, leaks — and those reactors are destroyed, we will have a nuclear explosion here. And many of the innocent people will die. And the nuclear power should not be used to make bombs, but to use as energy to power things, not bombs to destroy innocent lives. People are here to live, not destroy each other.	Seismic investigations and upgrades are being implemented at SRS reactors in response to the concerns of cognizant agencies. Section 2.1.3.1.2 of the EIS discusses seismic upgrades. It is physically impossible for the SRS reactors to create a nuclear explosion.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-58	STATEMENT OF CATHY WILLIAMSON	
	What you can't see can hurt you. Economics has taken precedence over the safety of ind. lives and the environment.	
	I have toured certain areas of SRS and one particular area which gives me chills is the burial ground.	
A-58-01	The burial ground consists of pits which are situated over an aquifer. SRS claims only low-level radioactive materials are stored in these pits which are lined for added safety reasons. However, the open pit I rode into had no liner, but the pit was filled w/ canister after canister of discarded radioactive materials exposed to the open. No explanation was given for the missing liner, and I was so overwhelmed with what I was seeing that I didn't question the reason for there not being one. But I am questioning it now!	The Record of Decision on the <u>Final EIS, Waste Management Activities for Groundwater Protection, Savannah River Plant, Aiken, SC</u> , dated 3/9/88 (53 FR 7557) determined that the new low- and intermediate-level radioactive waste disposal facility to be constructed at the SRS would have a vault design. Vaults employ a sealed, reinforced-concrete structural barrier, proper siting, and surface draining to minimize the intrusion of water that could leach waste constituents from the facility. Design also might include a complete exterior leachate collection system, a low-permeability secondary liner, and the grouting of waste in place to fill interior void spaces and add stability.
A-58-02	How accurate is the data on this antiquated facility? How safe are we? Despite ERF & GP and ind. like Arthur Dexter and Bill Lawless (both of whom are former SRP emp) we have chosen to believe that SRS is and has been run safely - Mistakes have been made at our expense, an expense that far surpasses any financial "Gain." The arguments one hears for continued operation of the plant is focused on National Security and locally on economics. How long can we "afford" to produce this radioactive waste before we ultimately pay an even higher price? The restart of these damaged & antiquated reactors is both dangerous and unnecessary. Nuclear war cannot be limited. Therefore nuclear war is no longer a viable option. I feel we as a community have lost far more than we have gained.	Chapter 4 of the EIS thoroughly discusses the environmental consequences of the proposed action and alternatives, including health and safety issues. This material, as well as the entire EIS, was prepared with the best, most current available data and information. Also, please see the responses to Comment A-09-02 on waste management and environmental restoration.

C-954

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response

The time has come for us to view this facility realistically - to see the obvious dangers. We have a responsibility to ourselves, as members of this community and to the human race.

In defense of ERF & GP who have been labeled Doom Sayers; the information they have provided is not for personal financial gain, but for you, for your children and, ultimately for mankind

We cannot, as responsible citizens ignore the current available information.

We can ill afford any further Deadly Deceit!

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-59	OPINIONS AIKEN STANDARD WHY SO MANY NUCLEAR WEAPONS? JAMES J. KILPATRICK Universal Press Syndicate	
A-59-01	WASHINGTON - Question: What are the probabilities of a nuclear war between the United States and the Soviet Union? Answer: The probabilities are nil. Question: Why, then, are both superpowers intent upon maintaining obscene levels of nuclear arms? Answer: Don't ask stupid questions. That is about where matters stand in the wake of Mikhail Gorbachev's visit to the United States. The Soviet Leader is agreeable to reducing strategic nuclear forces by roughly 30 percent. President Bush is equally agreeable. The newspapers provide neatly tabulated data on the pledged reductions. But the trouble with the figures is that they are essentially meaningless. The tabulations wash over our minds like so many waves, leaving not even a residue of foam behind. Faintly, vaguely, we can imagine the devastation caused by a single nuclear weapon. After all, most of us have seen photographs and read descriptions of Hiroshima after the bomb attack in 1945. The atom bomb of 1945 was a sort of Model T bomb. It carried the destructive equivalent of only 17,000 tons of TNT. In a fraction of a second that bomb leveled a city and killed nearly 100,000 human beings. Now we make hydrogen bombs that are lots more efficient. Now we can kill a million human beings in a single blast. Isn't that progress? At present, the United States maintains a strategic arsenal of 2,450 intercontinental ballistic missiles, 3,024 sea-launched ballistic missiles, 3,000 short-range missiles and 1,600 air-launched cruise missiles. For its part, the Soviet Union	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response

maintains 6,530 ICBMs, 3,642 submarine-launched missiles, 400 short-range attack missiles and 640 air-launched cruise missiles.

Under the pending agreement, the United States would have 1,444 ICBMs, the Soviet Union 3,060. We would have 3,456 submarine-launched missiles, the Soviet Union 1,840. Other missiles would be divided as if they were marbles - so many for our side, so many for their side. There would be 18,430 in all. And every one of these missiles is from 10 to 100 times as destructive as the bomb of 1945.

Question: Who needs them?

Answer: Why do you persist in asking stupid questions?

In theory, the policy of the United States is a policy of "strategic sufficiency," but the criteria for defining "sufficiency" are contrived from moonbeams. To such nuclear fanatics as Gen. John T. Chain Jr., commander of the Strategic Air Command, enough is never enough. Gen. Brent Scowcroft, national security adviser, thinks along the same lines. As Talleyrand remarked, war is indeed too serious a matter to be entrusted to generals.

For all the talk of a 30 percent to 50 percent reduction in strategic arms, the prospect remains a prospect of mutual assured smitherens. We would blow each other to bits, to the merest fragments. The Soviets would strike. We would strike back. In an hour a great part of the planet Earth would be a smoking cinder. Clouds of radioactive dust would blot the sun and swirl in deadly currents around the globe. Neither side could win such an exchange. The putative victor would have spoils not worth possessing.

There will never be such an exchange. The probability has been remote for the past 45 years. Given the collapse of the Warsaw Pact and the revolutionary changes in Europe, the maintenance of huge nuclear arsenals becomes all the more pointless.

Surely a strategic sufficiency could be preserved with a few hundred verifiable weapons apiece. Total nuclear disarmament is out of the question, but it is insane - wastefully, dangerously insane - to talk of spending an additional \$100 billion over the next decade on such stupidities as two mobile missile systems for more Trident submarines, and 75 B-2 bombers for which there is no plausible mission.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	Yes, the Soviet Union continues to produce and to deploy hundreds of intercontinental ballistic missiles. So what? The idea of nuclear parity is an idea that has never made sense. All that is required is a deterrent against the unthinkable. This observer does not fully trust Mikhail Gorbachev. By his own assertion he remains a fully committed communist. If he is toppled from power, other communists will succeed him. But we ought to distinguish between communists and madmen, and in the name of commonsense we ought to abandon folly and pursue a policy of prudence instead. [Mr. Russell Williamson submitted this newspaper column.]	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-60	STATEMENT OF RUSS FERRARA	
	Comments on the Draft Environmental Impact Statement for "Continued Operation of K-, L-, and P-Reactors, Savannah River Site, Aiken, South Carolina"	
	My name is Russ Ferrara and I am a life long resident of South Carolina and currently live approximately 12 miles from the Savannah River Site. First, let me state that upon review of the Draft Environmental Impact Statement for "Continued Operation of K-, L-, and P-Reactors at the Savannah River Site in Aiken, South Carolina" that the document adequately meets the requirements of the National Environmental Policy Act, and therefore the scope of the document should not be expanded.	
	However, there are two fundamental issues which I would like to discuss concerning SRS reactor restart. They are the environmental and "need for production" issue. The environmental issue can be broken down into three areas: (1) the impact of reactor operation on the environment in terms of thermal discharge and stack releases, (2) the impact of reactor operation on worker's radiation exposure, and (3) the impact of additional radioactive waste.	
	Let's first focus our attention on the environment and try to divorce ourselves from the fact that we are producing nuclear materials. Does discharging hot water into a man made creek result in a significant environmental impact? I don't think so! Is there any history of significant radioactive releases from any of the five reactor stacks at Savannah River? I don't think so! Have the workers at Savannah River received significant levels of radioactivity. No! Workers at Savannah River received very small if any radioactivity. The exposures levels at Savannah River are significantly lower than EPA standards which in themselves are very low. What about the additional transuranic waste that will be produced in the fuel assemblies? We all recognize the requirement to isolate this waste from the biosphere using both natural and engineered barriers. We also must understand that the this problem is not driven by the volume of waste, but the time it takes to decay down to low levels of activity. For example, Am²⁴³ has a half life 7,350 years and Cm²⁴⁵ has a half life of 9,300 years. These	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	isotopes exist now and must be isolated from the biosphere for periods of 10,000 years. We have the technology to safely do this in deep geologic formations that have been stable for more than 100,000 years. The point is that the magnitude of this problem does not increase by turning on the existing reactors at Savannah River even if you elect to run them for 20 more years since the real technical issue is the risk associated with the chosen ultimate waste disposal technology and not the total volume of transuranic radioactive waste which is generated. Another words, if you already have 100 isotopes of Am^{243}, and then you elect to produce 5 more Am^{243} isotopes, this production will not have an impact on the society's risk associated with the ultimate safe disposal of the 105 Am^{243} isotopes over the next 10,000 years. Therefore, I will conclude by stating that if you developed a scale from 0 to 100 regarding the actual environmental impact associated with restart of the SRS reactors this impact would be lower than 0.02. The next fundamental issue is the "need for production". I believe that we can all agree that our primary goal in this room, in our nation and in the world is to maintain world peace. However, we differ concerning the path which should be taken in order to reach our common goal. What is the best way to bring the Soviet Union to the table to discuss turning off their production reactors? Is it to keep the reactors shutdown at Savannah River? I don't think so! What is the best way to halt proliferation of nuclear materials around the globe? Is it to create a policy of nuclear non-proliferation in the United States? No! This didn't work in the U.S. in 1978 when President Carter tried it and this policy continues to cripple our commercial nuclear energy sector. We, the tax payers, ultimately pay the price tag for these irresponsible national energy policies. President Reagan's buildup of the Department of Defense has demonstrated its success by forcing the Soviet Union into arms reduction agreements. We are now seeing reductions in nuclear weapons; however, we are not seeing reductions in the Soviet Union's ability to produce nuclear materials. I submit that we must maintain the capacity to produce nuclear materials in the United States in order to maintain world peace. History has demonstrated that this is the safest and most	Please see the response to Comment A-06-07 on the changing world geopolitical situation.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	responsible approach to take in order to preserve our country's freedom. This is a fact. Is there a need for any other isotopes from the SRS reactors? You bet! Look at the future space missions and the need for Pu²³⁸. We have made great progress in telecommunications by using satellites in space. There are significant benefits associated with these future NASA space missions which cannot be accomplished with out a reliable nuclear power source. Pu²³⁸ is that source and has been exclusively produced at Savannah River. What about the potential need for medical isotopes; Co⁶⁰ for example. In the past SRS has successfully provided these much needed medical isotopes. Ask yourself if there will be a potential need for these medical radioisotopes in the future in our country or in the world. Are there potential medical advances which will require these man made radioisotopes? Try to look into the future and be progressive in this respect. In conclusion, the need to operate the reactors at SRS does exist from a political, technical and military point of view. It's time to get on with the business of operating these reactors safely in the state of South Carolina!!!	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-61	STATEMENT OF DR. STANLEY RICH THE AUGUSTA (GEORGIA) CHRONICLE 30 May 1990 Presented by Dr. Stanley Rich Aiken, S.C. Weapons production halt urged By John Winters Staff Writer	
A-61-01	Fifty-four top United States scientists and diplomats are urging President Bush and Soviet President Gorbachev to consider a complete nuclear weapons materials production halt - a decision that would directly affect the Savannah River Site. The summit talks beginning Thursday between the two leaders provide "a unique opportunity ... to halt and reverse the nuclear arms race," the officials said in a May 23 letter addressed to Mr. Bush and Mr. Gorbachev. The letter was signed by seven Nobel Laureates, two former cabinet secretaries, two former directors of the Central Intelligence Agency, and several lead negotiators of past arms-control agreements and others who played substantial roles in the development of the U.S. nuclear arsenal. A copy of the letter was given to <u>The Augusta Chronicle</u> by Energy Research Foundation, an SRS-watchdog group. "With large reductions in strategic and tactical nuclear weapons under active consideration, the United States and the Soviet Union...have the opportunity to avoid the further operation of old, potentially unsafe nuclear reactors for production of weapons materials and to avoid the spending of billions on replacement authors," the signers said. "The window of opportunity is fast closing, however, as the United States prepares to restart its weapons production reactors, all of which have been shut down for safety reasons since June 1988, and to construct new production reactors."	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	The three SRS reactors currently are the nation's sole production source for tritium and plutonium, two key elements used in making atomic weapons. Energy Secretary James D. Watkins announced earlier this month that the first reactor will be restarted in December or January, with all three reactors operating by the end of 1991. The writers said no further plutonium needs to be produced unless the superpowers are planning to increase existing weapons stockpiles. Plutonium takes thousands of years to decay. But continued production of tritium, which loses half its radioactivity in 12-1/2 years, poses a different problem, the signers said. Tritium's half-life means that in 12-1/2 years, half of its radioactivity is gone, and in another 12-1/2 years, half of the remaining radioactivity is gone, and so forth. "Its production must be continued to maintain the size of the nuclear arsenal," they said. "No fresh tritium needs to be produced, however, if warheads utilizing tritium are retired at a rate that keeps pace with or exceeds tritium's decay. "Under those circumstances, tritium recovered from retired warheads would be sufficient to replenish tritium in the remaining warheads for many years," the letter said. Current or planned arms reduction talks - START and the retirement of 3,000 U.S. tactical nuclear warheads and a larger number of comparable Soviet weapons from Germany and other European countries - will "likely reduce the U.S. and Soviet strategic stockpiles by as much as several thousand warheads" each. Although exact numbers are classified, there are an estimated 22,000 U.S. nuclear warheads, with the Soviet Union having a comparable number. "These reductions would create a sizable tritium reserve on both sides to sustain remaining warheads and would make additional production a costly redundancy," the letter said. "Even now, the amount of tritium in the U.S. weapons inventory is sufficient to meet tritium requirements of 3,000 warheads for 35 years and 1,000 warheads for more than 50 years."	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	The letter urged the Soviet Union to accelerate its current timetables of shutting down all production reactors by the year 2000; and said the U.S. should defer plans to restart the SRS reactors and build new reactors.	
	The Energy Department has proposed building a new reactor at SRS to meet all of the nation's tritium needs. A backup reactor would be built in Idaho to provide 50 percent of the nation's needs.	
	The two nations "could maintain a number of production reactors in 'cold-standby' status as a contingency against a breakdown in the ongoing arms reductions process," the letter said.	
	In closing, the authors said, "an immediate production halt would provide substantial domestic and international benefits without adverse military impact ... missing the present opportunity to achieve a production halt imposes a number of risks and costs, including those associated with continued production activities that could only feed the nuclear arms race and inspire other nations to follow suit."	
	<u>Letter authors</u>	
	Among the 54 diplomats and scientists urging President Bush and Soviet President Gorbachev to halt production of nuclear materials are:	
	• William Colby, former director of the Central Intelligence Agency.	
	• Ralph Earle, former director of the Arms Control and Disarmament Agency and former chairman of the U.S. SALT II delegation.	
	• Val Fitch, 1980 Nobel Laureate in physics, former presidential adviser on science policy and arms control in Nixon administration.	
	• Richard L. Garwin, member of the President's Science Advisory Committee under presidents Kennedy, Johnson and Nixon, as well as of the Defense Science Advisory Board to the secretary of defense.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	• Roswell L. Gilpatric, an attorney who served as deputy secretary of defense under presidents Kennedy and Johnson.	
	• Denis Hayes, chairman and chief executive officer of Earth Day 1990.	
	• Robert McNamara, secretary of defense under presidents Kennedy and Johnson, also served as president of the World Bank.	
	• Stanley Resor, former secretary of the Army, currently chairman of the National Advisory Committee of the Lawyer's Alliance for Nuclear Arms Control.	
	• John B. Rhinelander, lawyer, former deputy legal adviser for State Department and legal adviser to the SALT I delegation.	
	• Gerard C. Smith, chairman of the Arms Control Association, served as chairman of the U.S. SALT I delegation and later as special representative and ambassador-at-large for Non-Proliferation Matters.	
	• Stansfield Turner, former director of CIA.	
	• Cyrus Vance, secretary of state under President Carter.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-62	STATEMENT OF DR. DAVIS FOLSOM	
A-62-01	DR. FOLSOM: Thank you. My name is Davis Folsom, my residence is here in Aiken, I speak a citizen of the world. The world is changing. Aiken can embrace change or resist. History has many examples, and economies, and societies that resisted change. Visit the ghost towns of the west, the rusting steel towns of the north, or the museum plantation economies of the south. They are dead. The nature of life and earth has changed. It is time for Aiken, SRP, and DOE to change. The EIS Draft ignores reality of change. The issue today is whether to restart old, out of date, machines to produce tritium. It is time to take the same resources, dedication, and zealous patriotism and begin a conversion. The inner redirection of resources away from weapons production and toward the peaceful needs of society. Economic conversion is an idea being discussed and implemented in weapons communities throughout the U.S. Americans are embracing change, rejoicing in new peace, accepting new realities everywhere, except Aiken. Only Aiken wants more of the same. Only Aiken believes the Cold War still exists. Only Aiken believes the banner, "Better dead than red." What was the red menace? What was communism? Communism was central planning. We have that here, too, something called the Nuclear Weapons Stockpile Memorandum, directs DOE to continue to produce vast quantities of tritium. Communism was central control. We have that here, too. DOE from Washington with its huge budget controls Aiken. The private property rights we have here are totally dependent on DOE. The market palace is a captive of the central committee policy. Communism also included local party members. We have that here, too. Do you want to be accepted? If you want any of the perks or plantation memberships, if you want anything more than — in Aiken, you join or embrace the local party. Now it is called Westinghouse. Communism also had its KGB, spies, and informants to maintain the existing order. Well, we have that here, too. The whispering	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response

campaigns, the intolerance of dissent, the costa like trials with social and economic pound fees for anyone challenging the party.

There is a menace in Aiken, it is not red, it is green. It is the green of an enormous sum of money. But Aiken is dying. Dying a physical death. Read the EIS, it is in there. Dying an environmental death. Read the EIS, it is in there, too. And dying a physiological death, acknowledged only in the bedrooms and confessionals. And dying an economic death, though few recognize it. Look at the headlines. Even the Aiken Standard. The world is changing. Aiken can change or die when the bloated, cancerous, mushroom of SRP, growing bigger daily, consuming more lives, commanding technology, destroying more resources; finally, explodes.

It is less likely to be a nuclear explosion. It is more likely to be a giant pink slip. And unemployment notice knife, sent by democracy. The knife will puncture the SRP mushroom, scattering human spores, callously, and indiscriminately, like the bomb John dropped in Hiroshima. It will create an economic calamity. Face it. The world is changing while Aiken clings to the Cold War religion.

The EIS has presently, as presently written, quickly dismisses the options of moth-balling the old weapons machines. This should be the minute, critical, first step in the conversion of SRP. Only when the false god of tritium is discarded, can Aiken SRP be reborn, be reborn into the new and changing world.

Thank you.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-63	STATEMENT OF KATHY FOLSOM	
	RESTART OF REACTORS	
A-63-01	MS. FOLSOM: My name is Kathy Folsom, I am a responsible member of this community, this country, and our planet. My parents taught me very early that with each freedom we enjoy comes an equally important responsibility. I recognize and accept my responsibilities to my family, community, country and yes to my planet. This does not diminish commitment to country but accepts the extended view of global citizenship. It is a beautiful, fragile and troubled planet. Yes, I know the list of local, state and national problems we face are great but when the list of global problems is surveyed, nuclear proliferation, including all of the associated risks is high on that list and while this problem is much larger than Aiken, SC what happens in Aiken is one of the physical sources of this global problem. Aiken S.C. is one of the few remaining places on this planet where the cold war is not only not over, but alive, well, and flourishing. Aiken is a very unusual community. It is a stronghold for those who must believe in the necessity of the restart of the existing reactors as well as the construction of a New Production Reactor, in Aiken NPR does not stand for National Public Radio! Forty years ago when the political leaders of our state were successful in bringing the Bomb Plant to this community it was a poor place in a poor rural state. In very much the same way that a hungry person will eat anything they are offered this community embraced the coming of the nuclear age. Driven by the fear of the cold war, building bombs was a patriotic if somewhat risky business. The military industrial complex was quick to recognize the profit margin in preparing for war. Virtually everyone in Aiken is either directly or indirectly addicted to the bomb plant, for the jobs and material affluence its existence assures. Those holding minority views or those who question must be willing to suffer the consequences of expressing them, or out of fear either remain silent or choose not to know. The conversations I have had recently on this topic with other members of my community have run like this, we have to restart my husband works out there. I ought to learn more, I've always just expected them to know what they are doing and be	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	honest about it. I just don't think about it, I choose, not to have an opinion. The fear, paranoia and silence in this community are symptoms of a serious problem. I understand the importance and power of corporate loyalty. One of the first lessons of survival is not to bite the hand that feeds you. The problem is not the hand that feeds this community. but what it feeds the community.	
	I am obviously not a scientist or an authority on world affairs, so I would like to go on record as being in agreement with the 54 top U.S. scientists and diplomats who have written to Pres. Bush and Pres. Gorbachev urging them to consider a complete nuclear weapons materials production halt. The list of authors includes seven Nobel Laureates, two former cabinet secretaries, two former directors of the CIA, and several lead negotiators of past arms-control agreements and others who played substantial roles in the development of the U.S. nuclear arsenal. Their letter states, "an immediate production halt would provide substantial domestic and international benefits without adverse military impact... missing the present opportunity to achieve a production halt imposes a number of risks and costs, including those associated with continued production activities that could only feed the nuclear arms race and inspire other nations to follow suit.	
	I would recommend Alternative 3, the termination of operation and placement on cold standby of the K-, L-, and P-reactors.	
A-63-02	In reference to the draft EIS, it is a masterpiece of Orwellian double speak which reduces every aspect of this insanity to a sterile quantifiable formula. I turned immediately to the PURPOSE AND NEED SECTION- The "current forecasts" are for continued need to build and maintain the nuclear arsenal. The crucial document issuing this directive appears to be the presidentially approved, Nuclear Weapons Stockpile Memorandum which was approved by Mr. Reagan on Jan. 19, 1989. Since the EIS also states; "the potential exists that material production requirements could decrease due to the changing world geopolitical situation. I would contend that the "forecast" for continued need must be revised in light of the global changes which have dramatically changed the world geo-political situation. DOE must accept its responsibility to assure that this memorandum be reviewed and revised because not doing so approves a course of action which poses an unnecessary and unreasonable risk. We have heard many times during the past year that a unique window	See the response to Comment A-06-07 on the changing world geopolitical situation.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	of opportunity for real change exists. It is time to change. The reactors are as archaic as the world view they represent. We have enough tritium and plutonium to destroy our planet many times over and will for years and years. Another effective use of language to instill terror is the use of the term "canabalization" of warheads. This has been the phrase used to describe what in other arenas is referred to as recycling.	
A-63-03	According to the EIS the existing waste storage facilities are reaching capacity, the term used in this document, "awaiting ultimate disposal" is a joke. It is deadly in liquid or solid form, for a long, long, time, DOE doesn't know what to do with it, the technology does not exist yet. This report makes it sound like you can just flush it down the toilet. Please put some brilliant scientific minds to work on figuring out how to protect our community, our state, our country and our planet from these poisons. The DOE and Westinghouse have the power to redirect the mission of the plant so the talented, dedicated people who work there apply their skills to the projected \$25 billion dollar job of cleaning up after themselves and pursuing research which will truly benefit this planet.	Existing high-level waste tank capacity is adequate for interim storage of the high-level liquid wastes to be produced when production resumes, pending their immobilization in glass in the DWPf, which essentially eliminates any risk of environmental transport. DOE has a 5-year interim storage capacity for the vitrified high-level waste coming from the DWPf when it becomes operational in late 1994. DOE also is considering expansion of the interim storage facility for the vitrified waste containers because a national geological repository for high-level waste is not likely to be available by 1997 or 1998.
A-63-04	I request that DOE release of health records of past and present employees for review and analysis by an outside organization.	Please see the response to comment A-37-02 on worker health records.
A-63-05	I request that DOE contract with an outside agency to conduct a comprehensive health study for the residents of S.C. In closing, IS THE PURSUIT OF PEACE UNAMERICAN? PEACE IS A VERB NOT A NOUN, PEACE IS MORE THAN THE ABSENCE OF WAR. I CONTENT THE PURSUIT OF PEACE EMBODIES THE HIGHEST IDEALS ON WHICH OUR NATION WAS FOUNDED.	Recently, the National Cancer Institute/National Institute of Health released the results of its independent 2-year epidemiological study of the incidence of cancer in the populations surrounding nuclear facilities, including SRS. (Jablon S., et al., 1990, <u>Cancer in Populations Living Near Nuclear Facilities</u> , National Institutes of Health, National Cancer Institute, Washington, D.C.) Appendix B (Section B.1.5) of the EIS describes this and other health and epidemiological studies of the SRS region.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-64	STATEMENT OF JEFFREY BOWMAN	
A-64-01	MR. BOWMAN: Yes, my name is Jeffrey Bowman. I believe there is one person that spoke earlier in the time slot that I was supposed to speak in, his name was William Bowman, same last name, but, my name is Jeffrey Bowman. JEFFREY. And I am from Augusta, Georgia..	The occurrence of unspecified forms of leukemia in children, by itself, does not provide a basis for association with radiation exposure from SRS emissions. There are other factors than radiation exposure that can cause childhood leukemia, and some forms of leukemia are not caused by radiation. However, studies conducted in the SRS vicinity to date (and described in Appendix B of the EIS) have not shown any unusual cancer incidence of mortality related to SRS radioactive emissions. Please see the response to Comment A-63-05 on the results of the recent NCI/NIH study.
	The only issue I would like to address is the concern of health affects from the airborne tritium releases that have occurred during — while the production reactors have been on line, and, especially, in the 1980's. I have a list here of children who have developed leukemia in the years of 1985, and, 1986, in South Aiken. And there were six children — this data came from the Medical College of Georgia; that developed the childhood leukemia in the calendar years 1985, and 1986. I got this information in less than 30 minutes and I am curious why DOE, DuPont, and Westinghouse have been afraid to get any epidemiological data from South Aiken down wind from where they have been releasing tritium for over 20 years. And I just ask that the people in health physics tell the truth about this situation, come forward, inform the public about how much tritium is being released into South Aiken, and the health risk it poses to children and other adults.	
	It certainly would not cost very much compared to \$2,000,000 you are going to spend on the restart, to do a basic epidemiological study to see how many children are developing leukemia and how many people are developing thyroid disease in Aiken County.	
	It would just make sense in the EIS Statement to do — spend just a small amount of money and see if SRS is affecting the health of our children and other people in the area.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-65	STATEMENT OF MR. MARK D. ROBERTS	
	<u>TRITIUM FACT SHEET</u>	
	The Department of Energy says that we must continue to operate the aged reactors at SRS in order to supply needed tritium for our nuclear arsenal. We are told that failure to do so will be tantamount to unilateral disarmament. We are told that 9,600 jobs will be lost at SRS unless we restart the reactors. True to their form, DOE is telling us lies again! Here are some facts that DOE has conveniently omitted from its arguments for the restart of the SRS reactors.	
A-65-01	First of all, the need for tritium is vastly overstated. According to J. C. Mark in an article entitled "The Tritium Factor as a Forcing Factor in Nuclear Arms Reduction Talks" published as part of the W. G. Surcliffe Policy forum in <u>Science</u> magazine, Sept. 2, 1988: "Each side (US/USSR) can rest assured that even some 37 years after a tritium cutoff, enough tritium will remain for at least 1000 to 3000 warheads- a credible nuclear deterrent."	Please see the response to Comment A-06-01 on the need for tritium.
	If we are to believe Dr. Carl Sagan and his "Nuclear Winter Theory" the explosion of as few as 500 of these weapons would be enough to precipitate a period of darkness which would disrupt the food chain for enough time to cause the extinction of much of earth's animal life. As far fetched as it sounds, the nuclear winter theory has a sound basis. The fossil record shows that something similar caused the extinction of approximately 90 percent of all life, including the dinosaurs some 65 million years ago. This, the Alvarez theory, postulates that a meteor struck earth sending up dust, blocking enough sunlight to cause a collapse of the food chain similar to what Sagan predicts in his theory. Do we need to maintain 100 times the firepower required to precipitate such a disaster? Is national defense in serious danger if we have only 50 times enough?	
A-65-02	Mr. Mark continues to tell us that "Both the U.S. and the U.S.S.R. depend on tritium to boost the yield of their fission weapons and the fission triggers of their thermonuclear weapons. It represents the key to the compact and efficient designs of modern nuclear weapons."	The need for nuclear weapons is beyond the scope of this EIS.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	In the same forum Mr. Sutcliffe explains that "A halt to tritium production would not necessarily lead to a reduced stockpile of nuclear weapons in the future. Nuclear warheads can be designed that do not depend on tritium. Many nuclear weapons did not depend on tritium. New technology might circumvent or reduce need for tritium in efficient modern warheads."	
	Albright and Taylor writing in <u>The Bulletin of the Atomic Scientists</u>, January 1988, tell us: Although tritium is not required for U.S. nuclear weapons, most of them contain it because it essential in building more efficient and compact weapons... Without replenishment the amount of tritium in U.S. nuclear weapons would decrease by half in about 12 years, significantly lowering their effectiveness and reliability."	
	According to the <u>Nuclear Proliferation Factbook</u> prepared for the Joint Subcommittees for Arms Control, International Security and Science by the Congressional Research Service of the Library of Congress in August of 1985, page 275. "A (thermonuclear) device in which fission and fusion are combined can produce an explosion of great power. On average, in weapons of this type, roughly equal amounts of explosive energy result from fission and fusion."	
	From this information, we can infer that about half of the explosive power of our H-bombs comes from tritium and that they would work without tritium, albeit only at half strength, which is still awesome.	
	According to former secretary of Defense Robert McNamara, in a recent appearance on "The McNeil-Lehrer Report", we have approximately 50,000 nuclear weapons. Even if we waited for all of their tritium to decay, we would still have an arsenal capable of wiping out the human race.	
	Another thing DOE has neglected to tell us is that much of the tritium will be used for what they euphamistically call "enhanced radiation weapons", such as neutron bombs, particle beam weapons, electromagnetic pulse weapons and other specialties. According to the <u>Nuclear Weapons Databook-Volume II-U.S. Nuclear Warhead Production</u> by Thomas B. Cochran, et al., by the Natural Resources Defense Council, Inc., 1987: "Projected demand for tritium has lessened since early in the Reagan administration but substantial	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	quantities will be required for existing enhanced radiation weapons to compensate for radioactive decay. If additional enhanced radiation weapons are produced tritium requirements will go even higher."	
	Maybe DOE has plans for additional enhanced radiation weapons they're not telling us about this time. It wouldn't be the first time we were lied to by DOE. At any rate, much of what we're told by DOE doesn't wash. This is the perfect to "Just say NO to nuclear war!"	
	I am here today to advocate <u>more spending and increased activity</u> at the SRS! I am also in favor of permanently closing the aged reactors there and defining new, peaceful missions for the plant.	
	We are at a crossroads in history. The cold war with the Soviet Union is at an end. The dismantling of their European empire is nearly complete; the fragmentation of their country from within continues. Their leaders are openly pushing western style democracy and economics. We have accomplished our mission. Now, it's time to put the cold war mentality behind us and move toward the future. Instead of zealously insisting that SRS go on with its antiquated cold war mission, when we ought to lobbying for new, productive roles for SRS.	
	Here are some activities we should be lobbying for with as much energy as we lobby for bomb-making:	
	1. <u>Research and development of alternate energy sources:</u> When the Department of Energy was formed, its missions included research and development of alternate energy sources to help ward off future energy shortages and to ease us away from dependance on foreign energy sources. Unfortunately, during the Reagan administration this legitimate function of DOE was subverted. Now, the vast majority of DOE's money goes into production of war materials. The need for more bombs is no longer apparent. The need for alternate enregy sources has never been more accute.	
	News of the greenhouse effect, acid rain and ozone layer depletion drives home the importance of developing alternate energy sources. We should be demanding that DOE fund frenzied research at SRS into these problems. Let's make Aiken the energy research capital of the world. We're already set up for it.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
C-975	2. <u>Pure research into physics, energy, and practical applications thereof:</u> Again, the SRS is ideally suited to pure research applications. We all know of the benefits derived by the pure research done during the space race. Similar benefits to mankind and industry may accrue if we establish pure research as a prime function of SRS. This is an area in which the U.S. lags woefully behind countries like Japan, West Germany, and even the Soviet Union, where pure research is heavily subsidized by the government. This is a legitimate function of DOE but will be funded only if demanded by the American public. Let's take the lead in initiating those demands. 3. <u>Electricity from fusion.</u> Another mission DOE was charged with was development, by 1986, of a fusion reactor capable of producing more energy than it consumes. This mission was also relegated to a back burner by the arms buildup. This project truly holds the promise of unlimited, clean electricity. In one broad stroke it would drastically reduce our dependence on foreign energy supplies and go a long way towards alleviating the problems of acid rain and the greenhouse effect. If we lobby hard enough for this mission, we can get it. As I said, we're set up for it. An interesting sidenote: An article I read in the Bulletin of the Atomic Scientist stated that there is one dangerous byproduct of the type of fusion reactor envisioned: TRITIUM- the substance this whole restart issue revolves around. So, you see, DOE could kill two birds with one stone by proceeding with a fusion reactor at SRS. Let's demand it.	
	A-65-03 4. <u>Cleanup of the problems already in place</u> Parts of SRS will be dangerous for thousands of years unless we clean them up.	Please see the response to Comment A-09-02 on waste management and environmental restoration.
	A-65-04 DOE's own estimates indicate that at least \$100 billion will have to be spent to undo what damage has been done to our environment.	The DOE Five Year Plan for Environmental Restoration and Waste Management (DOE/S-0078P) provides preliminary estimates of SRS environmental restoration, waste management, and corrective action costs through Fiscal Year 1996 of about \$830 million. Estimated costs for the management of wastes from continuing operation over the same period are \$3.6 billion. Additional costs for environmental restoration and corrective actions bring the total to \$4.2 billion.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-65-05	Also needed is more research into the long and short term effects of radiation to the environment and to humans. These alternate missions will require vast sums of money and thousands of workers to carry them out. Therefore, the future of continued operations at SRS is secure even if the reactors are shut down. As you can see, there are many activities which can be done at SRS besides making nuclear weapons. If residents of the CSRA were wise, they would be demanding that new missions for SRS be defined and implemented. If we fail to act and utilize the talents already in place here, other places will be glad to host the activities. We mustn't put all of our eggs in the nuclear war-basket. Peace has broken out, and the American taxpayers will soon demand an end to the bomb-making at SRS. This area could suffer an economic collapse which will make the Depression seem mild. Let's act before events overtake our ability to influence the decision making process. Lets demand reasonable alternatives rather than press for an indefensible position which will hardly gain much sympathy for our area in the eyes of our countrymen and the other residents of planet earth. I believe our claim for these new missions is well grounded: Like good soldiers we have uprooted towns like Ellenton and Dunbarton for the defense of our country. We have permanently polluted our land and water with some of the most toxic substances in existence. We have paid our dues and DOE and the federal government owes us part of the peace dividend, but they won't give it unless we demand it! Therefore, I reiterate: Yes to more money and new missions for SRS - NO to the reactor restarts!	In March 1990, Secretary Watkins announced that DOE will turn over the responsibility for long-term health research on workers at DOE facilities to the U.S. Department of Health and Human Services, and directed the release of worker health data. SRS, which was designated as the first National Environmental Research Park in 1972, has long been a site for research into radiation effects on the environment.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-66	STATEMENT OF PAUL DAUGHERTY	
	MR. DAUGHERTY: Yes. Good evening, my name is Paul Daugherty. I would like to thank everybody for coming down here.	
A-66-01	I do not work for Westinghouse, I do not work for the DOE, I do not have any economic gains in Aiken. My primary job is a nuclear consultant, short term type, contract work. My main concern is making nuclear power safe not matter if it is for production reactors or nuclear power commercial reactors for power. As long as it is safe, it is a viable means of power, energy, and a deterrent to our freedom. I personally, — And I am a U.S. citizen, I have served my country in the Navy. I love America, I love the freedom that we enjoy, and I do not want to lose it. Freedom is often taken for granted until it is lost and I do not plan to lose freedom. I do not want to have my son, three and a half year old son, my 13 weeks son; lose his freedom. I think we got one of the best countries in the world and we ought to keep it that way. And if we need to have a deterrent such as a big stick or, in our case, some nuclear weapons; that is the way it is got to be to keep the people scared of us. When you are number one, you got to stay that way. And I think we are the best and I think everybody kind of picks on because we are the best. It is sort of like the Dallas Cowboys, America's team, — and everybody else wants a piece of the pie. I have about 15 years commercial and Naval nuclear power experience so I am not really talking off my cuff. I have been around and I have been a reactor operator. I do not believe you can really, you know, say yea or nay to nuclear power and production reactors unless you know what you are talking about. And I think one way is to be an operator. If you are a reactor operator who has been around nuclear power, you can speak for yourself. I really do not think the fanatics that are out there that are saying anti-nukes or no-nukes because I do not think they really know what they are talking about. Many people do not know the	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	difference between a reactor building and a cooling tower. Those big cooling towers you see over at Mobile, most people think that is the reactor building. Well, if that is the level of knowledge that people have, maybe they ought to get educated because ignorance breeds fear and I know this whole society really fears nuclear power. I do not know why. I think it is clean. Fossil plants we call dust burners and they are pretty dirty. If you lived by a coal plant or a fossil plant, they are dirty.	
	I do not have a speech here, I am not an eloquent speaker, but I speak from my heart and it is the only way I know how to talk.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-67	STATEMENT OF J. ALLEN BRODIE	
	In addressing the issue that we have before us today, I feel that it is only wise to base our future initiatives on our past experiences. In World War II the United States brought to an end "with 2 nuclear bombs" the greatest World War in the history of mankind.	
	These two bombs not only revealed the immense energy found in the atom, but also brought about a realization that our scientists had unleashed a resource that would change the world. We recognized that harnessing this power not only secured our homeland from would-be aggressors, but also created a window of opportunity for many generations to come. When I say "window of opportunity" I mean the peaceful use of all of the nuclear processes. To me, peaceful use is a huge stockpile of nuclear weapons that are perceived by other 3rd world countries and would-be aggressors as very simply too much tackle. They must continue to receive the message that we are a very powerful and free nation.	
A-67-01	I urge Secretary of Energy, James D. Watkins, to comply with the requirements of the National Environmental Policy Act and address the environment, safety and health considerations. I expect him to resume operations of K.L. and P. Reactors so that we will have a more than sufficient supply of nuclear weapons to protect my family, my friends, and this country.	Please see the response to Comment A-13-01 on Secretary Watkins' commitment.
	I further encourage him to give his full support to nuclear technology transfer as it relates to improving human suffering. To move ahead with the development of cutting edge technology. To develop and explore the frontiers of the nuclear processes as they relate to energy sources for laser defense weapons, space exploration, nuclear medicine and therapy robotics, medical laser technology, computers and other highly sophisticated equipment.	
	I encourage our government and Secretary Watkins to use the vast knowledge bank located at the SRS as a hub to create, develop build, and have on line 2 Additional new reactors by the year 2000.	
	As we enter the 21st century nuclear processes will be the primary power source. The elimination of untold suffering could be brought about through this initiative.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-67-02	I urge that environmental clean-up continue at SRS and that this site be a model for the rest of the world. We need to draw on our existing knowledge as it relates to environmental issues and develop a base at SRS that can be used to solve the many abuses of the past.	Please see the response to Comment A-09-02 on waste management and environmental restoration.
A-67-03	As new reactor designs are developed we should focus on reactors that perform dual rolls. The first as a source of nuclear material, the second as source of power. These two processes would compliment each other at SRS. In closing I feel our future prosperity and security is directly related to nuclear Technology. This can best be brought about through education, development of processes and an aggressive initiative. That we must recognize that our past successes were brought about by respecting the laws of nature. That being prepared and aggressive in our approach to the future has indeed been our greatest asset. That individual freedoms carry the obligation of individual responsibilities. That a lasting peace can only be assured through adequate American military powers. J. Allen Brodie 457 Town Creek Road Aiken, S. C. 29802	Section 2.4.1 of the EIS discusses the New Production Reactor.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-68	STATEMENT OF THOMAS P. HENRY TO THE U.S. DEPARTMENT OF ENERGY PUBLIC HEARING ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR CONTINUED OPERATION OF K-, L-, AND P- REACTORS AT THE SAVANNAH RIVER SITE (JUNE 8, 1990---7:00PM) Good evening, ladies and gentlemen, my name is Thomas Henry. I recently moved to Aiken, S.C., and I speak for myself. Thank you for this opportunity to comment on your EIS. First I would like to say that the SRS is a National Treasure. Moreover, the three reactors mentioned in this EIS are three old but valuable jewels in that treasure. For the past 35 years, the SRS has been as valuable in preserving our national security (by providing a deterrent to nuclear aggression) as the Smithsonian Institution in Washington, D.C. is valuable in preserving our national heritage. This treasure has been entrusted to the DOE. Now in the EIS, it is stated that the government requires additional new supplies of nuclear materials, especially Tritium, in order to maintain that nuclear deterrent. The basis of that position is supported by classified data which is not published in the EIS. Although I am not privy to that data, I am willing to accept the stated position new supplies are needed for two reasons: First, Tritium decays with a half-life of 12 years and must be replenished. Second, the greatest threat to the national security of the U.S. remains the enormous nuclear arsenal of the Soviet Union. Since the half-life of Tritium can not be changed and since the Soviets continue to produce and deploy new nuclear weapons, I feel it is self-evident that SRS must continue to produce nuclear materials. I also feel that there is an additional reason why the SRS reactors must be restarted. That reason is that DOE must establish credibility that it and its contractors can operate nuclear materials production reactors in the 1990's in a safe and environmentally sound manner. DOE's credibility today is very low. At virtually all of its nuclear weapons facilities, there are safety and environmental problems. DOE can reestablish that credibility here at SRS. In fact, if DOE cannot demonstrate in the near future that it can operate these reactors in a safe and environmentally	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-68-01	sound manner, I see no way that Congress will give them 3-6 billion dollars to build and operate a new production reactor. Failure by DOE would be a serious loss to the nation. I wish DOE well, and I hope they succeed. With regard to the EIS itself, I recommend that a comparison table be included in the summary section which would compare risk from operation of the reactors with risks which a person is generally familiar with. For example, the EIS states that the risk of a prompt offsite fatality is 8×10^{-11} per-reactor year. That risk is comparable to someone in the Central Savannah River Area being struck and killed by a meteorite. It would be useful if data like that were provided in a comparison table. Finally, I work for a consultant at SRS, and my family (including four small children) live in Aiken. I face a risk of 4 in 10,000 each year of being killed on the highway while driving to or from work. I believe the risk of my being killed by a reactor accident is about one million times smaller than that. I and my family can live with those risks. Please don't make a waste of my work effort by turning the Treasure you have been entrusted with into museum pieces rather than operating reactors. Thomas P. Henry	Table 4-48 in the EIS provides a perspective on, but not a comparison of, common risks that might be familiar to most people. Risks are calculated by a number of different methods and different bases, which make exact comparison invalid.

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response

A-69

STATEMENT OF GLEN SCHLAFER

MR. SCHLAFER: My name is Glen Schlafer, I come from north Georgia, I represent, primarily, myself and some of the good people in north Georgia who are at this time at an Environmental conference trying to provide your children, and my children, and my grandchildren, and my grandchildren's children, etcetera, etcetera; with an environment they can live with on this planet.

You know, I was 14 years old when the first nuclear bomb went off. It was a thing that my generation — I did not know much about it then, but, you know, it has taken me 47 years to stand up here, or to sit here, and say, man we got enough of these things. We do not need anymore. How long is it going to go on? Until each of us has a little back pack with an individual programmable nuclear weapon you an project at somebody.

When I was this young man's age here, the Germans and the Japanese were our enemies. Now we are enlisting the Germans to help us in Europe and we are driving Japanese cars; at least most of us. And I do not understand, now the Soviets are not going to be our enemy anymore. Maybe the government has to advertise. Who is going to be our enemy next year, the Norwegians?

We are going to run out of enemies pretty soon. However, in this day and age of deficit spending, and you hear a lot about it. Hundred billion for S&L bailout. Billions and billions for this, we are \$50,000,000,000 in the hole, or mortgaging our children's lives and their children's lives with our national debt. We need money now for prenatal care of woman, mass transit, health insurance for the thousand and millions of Americans that do not have it. We need money for all sorts of things in this nation; AIDS research, disease research. We need to make this planet place to live in, not a worse place to live in.

You know, I make a bad joke, but I would like to work for the Savannah River Plant because I could go hunting at night, and we could hunt deer at night, you know why? Because I hear they glow in the dark. And I do not know if they do or not, but I heard there are some strange looking turtles running around loose with men running after them that do omit radioactivity and they are not allowed to cross the road.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-69-01	You know, any use of the weapons that — The materials that are made here are used for nuclear weapons. All right. I think we all agree to that. If these weapons are ever used, it means the end of our planet and anyone who sticks their head in the sand and says that is not true, is kidding themselves, they are numbing their own minds. Nuclear holocaust will follow the use of the weapons made from materials produced at the Savannah River Plant. Perhaps the biggest thing, and if I have only given one reason; what are we going to do with the waste? How many people are we condemning to death because of this nuclear waste in the future? How many children, how many people are going to die an early death because of the waste from this plant and other plants like this all over the country. Rocky Flats, -- so on, and so on. We do not know what to do with the waste. There is no place to put it that is safe forever. We know that. Anyone who tells you there is a safe place is, I think sometimes, is compromising your intelligence. I would recommend who would really be interested to see the film <u>Building Bombs</u>, before they make their final decision. Thank you very much.	Please see the responses to Comments A-63-03 on high-level waste management and A-09-02 on waste management and environmental restoration.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-70	STATEMENT OF DAN EVERETT	
	My name is Dan Everett. I live in Athens, Georgia and teach computer science at the University of Georgia. I appreciate the opportunity to offer testimony, and as a technical-type person I do truly appreciate the sincere efforts of your engineers to refurbish the production reactors. I am also the father of three children, and I'm here this evening because I think your bomb plant is endangering my kids. I suspect that the greatest environmental impact of restarting the reactors is not what you do here so much as what you must leave undone.	
A-70-01	I refer to the many urgent cleanup projects at contaminated DOE sites around the country, which go unfunded or underfunded while DOE forges ahead on expensive weapons-related programs. I respectfully submit that more tritium is just not what we need in the post-Cold War world. I ask that you maintain the K-, L-, and P- reactors in cold standby; in other words, KEEP THEM SHUT.	Please see the response to Comment A-09-02 on waste management and environmental restoration. Congress establishes separate funding for waste management and environmental restoration and for defense nuclear materials.
A-70-02	I would like to explain why the national interest does not, in my opinion, require these reactors to operate. Unfortunately you have chosen to classify the details of your estimates of tritium need. I think this is a big mistake and undermines the democratic process. It was this same passion for secrecy which led to the waste-disposal crisis in which DOE now finds itself. I understand that as members of a vast bureaucracy it may not be your job to question the Nuclear Weapons Stockpile Plan. As concerned citizens, it definitely is our job. Since you won't tell us specifically why you want the tritium, we must deal in generalities. Tritium is needed both to develop new types of nuclear weapons and also to maintain the current stockpile. The Pentagon wants an array of new weapons which are not just unnecessary; they would make nuclear war more likely by their very existence. Among many grievous examples I might single out the Earth Penetrator Warhead, which burrows underground to destroy Soviet command bunkers. This type of weapon represents the worst type of Cold War paranoia: a view of the Soviet Union as a nest of noxious insects which must be stamped on and totally rooted out. The day for this type of thinking should be long over.	Because detailed information on need involves national security information, DOE has evaluated data related to nuclear material requirements and the production capabilities necessary to meet these requirements in a classified appendix to this EIS. Although DOE did not distribute Appendix A with the main document, the decisionmakers will be able to consider it. It is also available to individuals meeting security requirements. DOE has included unclassified information from Appendix A in Section 1.2 of the EIS. Also, please see the response to Comment A-06-01 on the need for tritium.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	You may argue that, at the very least, we must maintain the tritium content of the current weapons stockpile. We know that the weapons stockpile must eventually be reduced at 5.5% per year if you don't make more tritium. This is a very slow rate of decline, and we'll be quite disappointed if the pace of arms control doesn't reduce weapons faster than this. Forty years of Cold War have so bloated our nuclear arsenal that it would take many years of 5% decreases to have any noticeable effect on our military capabilities.	
	Why must we be so shy about seizing the chance for peace, and so bold about keeping these reactors hot and ready for a nuclear war? For the sake of my children—for the sake of us all—let us CHOOSE LIFE. The war is over. KEEP THEM SHUT.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-71	STATEMENT OF ARTHUR MARTIN	
A-71-01	MR. MARTIN: My name is Arthur Martin, and I represent me. I am one of those people who work at the Savannah River Plant for 27 years. I buried tons of that stuff that little lady was talking about a while ago. I buried it in the burial ground. And it is going to stay there because there ain't nobody going to move it. But now one thing I would like to know is where are all these people getting this information that they are coming up with about what goes on at the Savannah River Plant and what goes on in the Department of Energy. I read in the paper here the other day that some of these worrying about this Environmental statement or something, they go out here to the Savannah River Plant and get my medical record. Well, I object to any one of them having my medical record. That is none of their business. I worked for a fellow out there at the Savannah River Plant and I wish Mr. Watkins, or Dr. Watkins, or whatever he is that runs the Energy Department would tell some of them like I heard old Tom tell some of them one day, I am running the Transportation Department in — Today. I may not be running it tomorrow but I am running it today and, by God, I am going to run it. And I think that is what we need for some of these people up there in Washington to quit listening to these people rolling around out here on the ground, parading up and down the streets with signs, eight or ten of them, going from one place to the other trying to tell our government how it should be run because they are very much in the minority and there is just not enough of us man enough to stand up and speak out and say what we think. And I thank you.	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-72	STATEMENT OF ALISON JONES	
A-72-01	MS. JONES: Well, I do not know quite how I can talk about it. My name is Alison Jones, I am a student at the University of Georgia, I am a — major. And I come from South Carolina so I feel that I have a right to speak and to parade around with signs all the time. I come here tonight to speak and to say that I think that this site should not be restarted again on the basis of a lot of things that people have more accurately said than I can. I do feel the major thing here is to start what is tantamount to a willingness to risk poisoning the people of the state of Georgia and my home state, South Carolina, due to the aquifer that runs beneath the Savannah River Site. To restart it would be a blatant disregard for the health of these people and — As people have said before, outdated Cold War view over the health of the citizens of the United States. There are many other issues involved here as far as people working here. And I do not want to take anyone's job. I do not want to shut this down and basically to make people to be poor and to be without jobs. And I agree with other people who stated before that there should be a process to switch the area of Aiken and other communities over to a peace time economy and there are many good suggestions that have been made already. I think if the people that have come here tonight care about the people here in Aiken and care about the other people in their communities and care about themselves and their children, or will be children, and it is not here to threaten anybody that is here to make a statement.	Please see the response to Comment A-52-02 on the aquifer beneath the SRS. Section 4.1.6 of the EIS presents the risks to the public from the operation of the SRS reactors and their support facilities, and supports a conclusion that risks to public health are not significant.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-73	STATEMENT OF JAMES ABBOTT	
	MR. ABBOTT: My name is James Abbott, and I represent myself, a citizen of the United States.	
A-73-01	I would just like to say that I really do not think that these Environmental Statements for any of the nuclear facilities, here in the United States, are complete. I have been doing reports on this type of subject from high school, on up to now, I am 24 years old. I obtain my information from libraries, university libraries. And I see things like this gentlemen saying earlier, leukemia, cancer, are much higher in areas down wind from nuclear facilities. Ninety percent higher than up wind, you know, within a five mile radius. And I think this is kind of uncanny and something that should be considered.	Please see the responses to Comment A-30-03 on health effects and Comment A-63-05 on studies of health effects in the SRS vicinity.
C-989 A-73-02	I also think it should be considered that there really is not permanent site to dispose of this high level radioactive waste that we have. There are several temporary sites throughout the country, but there has been no permanent site designated. And continued generating this waste, even though we have no place to put it, it is in insane, it is insane.	Please see the response to Comment A-63-03 on high-level waste management at SRS.
A-73-03	The Savannah River Plant has been running for several decades now, 20 years, beginning in 1970, they have detected leaks. So obviously the integrity of the structure has been sacrificed and I really, personally, do not believe that something this large that is just contained in one block should really be patched together. It should be rebuilt, if that has to be done. That is it. Thank you.	The SRS reactors and support facilities began operation between December 1953 and March 1955. Modifications and upgrades of these facilities, as well as their routine maintenance, have been continuing activities at SRS for the past 35 years. Section 2.1.2.7 of the EIS discusses accident prevention.

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response

A-74

STATEMENT OF CHRISTOPHER DE BARR

MR. DE BARR: Thank you. My name is Christopher DeBarr and I come from Athens, Georgia representing myself as a citizen of Georgia and the United States.

I was born in 1961, under the wings of supersonic jets, in a time which would culminate, when I was two, with the Bay of Pigs. A time in which this nation verged the — nuclear catastrophe as it ever has. People who were living in that time, who are old enough to remember that, tell me how tense and terrifying those few days in October were.

In October, 1990, we will be deciding again whether we should, as a nation, commit ourselves to production of materials which would be usable for bombs. Bombs we never want to use. We are seeing an — time upon us. There is the time of the past. A time when we believe that peace could be gained by having such a huge weapon that no one would start another war and kill millions of people. There is a time of geology, the time hazardous wastes, which are produced. Which invisibly seep into the — which we do not know how to take care of. After all, in 9,000 years, the pyramid was not built 9,000 years ago. We in civilization are advocating making materials which will out last all recorded history. That is our destiny.

Furthermore, time is convening in terms of jobs. Jobs in Aiken, in — and else where in the country you will find the factories where honest men and women work trying to provide for their families. — Have occurred because the — We as a nation cannot turn our back on these people.

We have time in geo-political sense in which — is giving us that opportunity to seize the chance to end making weapons, holding the stick over each other's heads. It is becoming an information globe society, not a society of fear. — Will reside in the hearts of men and women.

Will we take a chance with these conversions of time? Will we let history end? Will this October, citizens decide, we will risk no more fear such, as was experienced when I was a baby, at the Bay of Pigs.

C-990

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-74-01	I vote we stop production of tritium. Tritium will last for a long, long time and our nuclear arsenal will sustain itself providing a basic deterrent for 37, 35 years, at least. Furthermore, the notion of tritium is that it provides a fusion, making a more precise bomb. The more precise we get with our bombs — And should any of this tritium leak out, it could be used. You could make a very small bomb that could be used for the very precise urban target wreaking havoc on people who never intended to be part of any sort of nuclear catastrophe. Tritium is not necessary to nuclear warfare. All it does is make it more and more realistic and likely. I want to protect the jobs of the people here in Aiken. I want us to convert this economy — with whatever it takes as a nation can — But I also want to see the specter of, the — specter, of endless radio-active waste ended. Thank you.	The half-life of tritium is 12.3 years.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-75	STATEMENT OF BILL WRIGHT	
A-75-01	MR. WRIGHT: My name is Bill Wright. I represent myself.	Comments noted.
	I am a contractor at the Savannah River Site. I work in the record department — test. So I am directly involved with this restart effort and have been for about two years now. Most of the test engineers that I work with have between five and 20 years experience in a commercial nuclear plant. The procedures they write, the test they run are done today in accordance with commercial nuclear standards. These plants, as I speak, are being restarted in the best possible method known to us and the country today. Therefore, as a citizen of Aiken, I fully support the restart efforts at Savannah River Site for the purpose of maintaining the community, maintaining our country strong, which it has done all these years. Thank you.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-76	STATEMENT OF SCOTT STARLING	
A-76-01	MR. STARLING: I think one issue that needs to be stressed here tonight is, we all, although we have differences about whether or not we are going to restart this plant, I think we all have a shared interest in safety. And I think that we need to understand the concern is not one that is economically oriented. There is no job to throw people out of their jobs. But this concern comes from the very real possibility that we could have problems for safety. After all, when we think about the environment the idea is that we want our environment to be one that is conducive to our health. And so I think it is important to emphasize that we do have that shared common interest.	Please see the responses to Comments A-30-03 on health risks and A-34-09 on safety.
A-76-02	Just as an overview concerning the Environmental Impact Statement, I would like to state here, publicly, that it has come to my attention tonight that some of the personnel who were working to put together the EIS have been employed by Westinghouse. And I think this sets up a potential conflict of interest because the EIS itself is the document which talks about the safety of the restart of this facility. And if it is — Since the restart is going to be under contract by Westinghouse, I think that there could be problems with that. So I would for the Department of Energy to determine, will any of the employees who worked on the EIS be employed at the Savannah River Plant, and what is the relationship between the people who worked on EIS and Westinghouse at present. And what would be the effect of having Westinghouse employees put together the EIS statement. How could that effect the EIS Statement? And, finally, I want to comment directly on some of the problems that I found in the Environmental Impact Statement, specifically under other technologies where you talk about the other ways that we could get the material that we needed without restarting the plant.	The EIS contains a List of Preparers following Chapter 5. That list identifies no Westinghouse Savannah River Company employees; however, the preparers did use WSRC (and Du Pont) documents as references for much of the information cited in the EIS.
A-76-03	I was very disappointed that Appendix A, which talked about the quantitative measure was classified. I can certainly understand your concern on that issue. But I think that you could have given at least a rough quantitative measurement as far as what was going to be needed, because as it stands now, people who are interested in	Please see the responses to Comment A-70-03 on the review of classified Appendix A and Comment A-06-01 on the need for tritium.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	this issue, really do not know if we need to restart the plant. And until that information becomes available in some form, you know, it is really not, you know, how can we say whether we need to or not. And I do not think that is a question that should be decided by, you know, government interests. I think people should be able to look into that issues.	
A-76-04	Another aspect that concern me was that under other technologies for getting the material, there was no discussion of recovery from weapons that we have presently. And I think that should have been one of the considerations. And, secondly, I think that you should have included a provision in here concerning what the demands for nuclear material are going to be regarding new arms	Recycling and recovery are being performed, Section 1.2 discusses recycling facilities and the recycling of materials from retired weapons. The supply of materials from recycling is considered in Appendix A in analyzing the need for continued operation of the reactors. Also, see the response to Comment A-06-01 on the need for tritium.
A-76-05	agreements that have been reached between the U.S. and the U.S.S.R. because without that we, again, it threatens the ability to decide whether or not we actually need more nuclear material.	Please see the response to Comment A-06-07 on the changing world geopolitical situation.
A-76-06	So, in conclusion, I believe it would be in the best interest of the Department of Energy and the people who live in this area, that the EIS be redone. And one other point I would like to make — I do not know how many people have actually read this EIS and I notice here tonight that there were not any copies available. I realize that you can request them from the DOE, but it would have been a lot more convenient if you guys could have had these things out here so people who wanted to read these things could have had them. The person I talked to tonight, and they said, well we will get you a copy, well, that is not going to do me any good since this is the last hearing. I think in the future, you need to make these things more widely available. Thank you.	DOE distributed more than 1,800 copies of the Draft EIS directly to individuals, public agencies, and government officials. In addition, copies are available for review in many local and regional libraries and public reading rooms. DOE has entered the names of individuals who registered at the public hearings into a distribution list for the Final EIS.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-77	STATEMENT OF KATHRYN KYKER	
	My name is Kathryn Kyker, I live in Athens, Georgia. I'm a Social Worker, a mom, and a member of The Athens Peace Coalition.	
A-77-01	I've been concerned about SRP for over six years. In the summer of 1984 I was an organizer for the summer-long Peace Encampment here at Aiken. Through the encampment I became more informed about SRP and certainly more alarmed. I also began to become acquainted with Aiken and her residents. I began to understand the complexity of this issue- the jobs involved, the livelihoods that are affected by the plant. But I also became more concerned about the plants impact on the health of those working and living near SRP. Back in those days I believed that it would take a much more serious accident than previous accidents for SRP to shut down. The 1985 SRP memo released by Congressional Committees, describes numerous reactor accidents at SRP between 1957 and 1985. The accidents were among the most serious ever documented at U.S. nuclear reactors; several involved fuel melting.	Please see the responses to Comments A-30-03 on health risks and A-63-05 on epidemiological studies.
A-77-02	But obviously, this is no longer the summer of 1984- it's six years later and the world is more different than any of us would have believed possible. Do we really need to continue to produce tritium for bombs that we, our government, is working towards dismantling? Some people who don't think so include former Secretary of Defense, Robert McNamara, former Secretary of State, Cyrus Vance, former CIA Directors Colby and Turner, along with fifty other prominent Americans, including Nobel Prize holders, diplomats, and scientists. In a letter they wrote to Bush and Gorbachov they stated that no credible case could be made for further production. The Soviet Union has announced a timetable for shutting down production by the year 2000 - they are being urged to step up their timetable. But even if they waited until the year 2,000, a 20% reduction of our stockpile, as a result of the START treaty, would mean that we would not require more tritium production until 1999. This is according to a report by The Union of Concerned Scientists. Also, we have to look at the expense. As a Social Worker, I'm well aware of the crisis in this country and the desperate need to	Please see the responses to Comments A-06-01 on the need for tritium and A-06-07 on the changing world geopolitical situation.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	reinvest our resources into our people rather than adding to our stockpile of over 23,000 nuclear weapons. It's imperative that we stop now at this point in time and reexamine our priorities in light of new global realities. For me personally, something besides new global realities has occurred since the summer of 1984... I've become a mother- twice. And I feel more compelled and determined than ever to work towards a future free of this threat to our safety, health and environment. Driving up here tonight I began wishing to myself that the plant wasn't so far away and then I jolted to reality and realized that I had better be grateful for each and every mile that separates my home and family from SRP. However, this plant is not just a local issue. We're all responsible for the land, the damage done to it in the name of "national security", and for the misalignment of priorities that is illustrated in our federal budget each year. This responsibility belongs to each of us equally. And so does the responsibility of finding alternative employment for those employed at SRP. I'd like to end my testimony with this offering: Freedom doesn't come on the wing of a bird, it doesn't come like a summer rain, Freedom's a much harder thing. You gotta work for it, strive for it, day and night for it, every generations gotta do it all over again. For me this song means to not take your freedom for granted, but to realize that sometimes you have to work hard to achieve what you want. We all have the right to be free from the harm of nuclear weapons and their production, and the right and responsibility to create a better way of life for all of us and our children. Thank-you.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-78	STATEMENT OF MELANIE SMITH	
	MS. SMITH: My name is Melanie Smith, and I am a member of the Athen's Peace Coalition, I am a concerned citizen.	
	Over the years Savannah River Site has established a record of dangerous instance and poor management. In 1981, the plant was 20 years old, were discovered — contaminated water. This seems to be the beginning of a long line of life threatening hazards and blatant — by the Department of Energy at SRS.	
	In 1986, DOE's quality assurance report found inadequate fire protection systems, and excessive releases of tritium and heavy water from the reactors. Staff was discovered to be inadequately trained and tested. A general accounting in March of 1987, revealed the SRS reactors ran for six years at power limits which might have overwhelmed the emergency cooling system during an emergency.	
	Obviously, an accident waiting for a time to happen. Reactors were powered down. The general accounting report also cited inadequate and outdated testing for cracks in reactor walls and lack of attention to identified problems at SRS. The plant was further found to have inadequate an inadequate earthquake program. In 1988, and in 1989, cracks were discovered in reactor cooling pipes. These and other instances, some very serious, led to reactor shut down in the summer of 1988.	
	In 1989, John Ahern told the House Subcommittee that DOE officials had gotten so heavily involved in the restart of reactors that they had put aside the development of a nuclear safety policy which would rate the safety consciousness at SRS. It is obvious from these instances, and others, that the DOE has an atrocious record of self regulation. Tax payers have no reason to believe that this situation will improve. DOE has failed again, again, and again.	
	I feel that they have conclusively proved that the restart of reactors, not safety, is their priority. DOE has estimated cost — as high as \$244,000,000,000. This is for day to day operations, renovations, new facilities, and minimal environmental clean up over the next two decades. Even if this money was wasted to restart	

C-997

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	reactors at SRS, the reactors are so fragile and antique that 20 years seems to be the maximum amount of time the reactors could produce tritium. This means spend \$244,000,000,000 on reactors that will have to be shut down by the year 2010. This seems wasteful and ridiculous.	
A-78-01	SRS currently stores 35,000,000 gallons of high-level liquid, radioactive waste in underground tanks. There are more 1,600,000 cubic feet of trans uranic waste, 230,000 cubic yards of chemical waste, have been poured into unlined pools, into the ground, and into streams which flow through the site and empty into the Savannah River. According to the EIS reports, existing waste facilities, if SRS is restarted, would be filled early 1991. This means waste will be buried in new facilities. Estimated cost to clean up present waste at SRS are as high as \$200,000,000,000. SRS already has had great environmental impact on local marsh lands and ecosystems. Tritium tainted water is suspected to have leaked into a large aquifer lying underneath SRS, creating more waste — obvious environmental impact. SRS draws at a maximum about 28.5 cubic meters of water per second from the Savannah River. Most water is used for cooling and returns to river, via, streams, super hot. Since SRS reactors have been in outage for over a year, much vegetation has made a comeback. Restart of reactors will again eliminate most vegetation in these areas.	DOE eventually will require new low-level waste facilities to accept wastes from other facilities at SRS, regardless of whether the reactors resume production. Please see the responses to Comments A-09-02 on waste management and environmental restoration, A-63-03 on high-level waste management, and A-65-04 on SRS waste management and environmental restoration costs. Also, please see the response to Comment A-52-02 on groundwater contamination.
A-78-02	To say that these conditions existed during operations before SRS was closed, does not justify restart. Wetlands around — have also started to recover. Restart will eliminate all recovery.	In several places the EIS acknowledges the alteration of wetland vegetation and habitat, particularly downstream of K-Reactor during operation in the once-through cooling mode. These impacts are directly related to thermal discharges that occur during reactor operation. Thus, when the K-Reactor recirculating cooling tower begins operation, reversal of alteration effects will take place in much of the wetland vegetation areas. Section 4.5 of the EIS has been revised to include a discussion of wetlands mitigation options.
A-78-03	I am certain that DOE greatly exaggerates the nation's need for tritium. There is an atmosphere of peace engulfing the world. The so-called Soviet — greatly disintegrating before our eyes. The fact that DOE is demanding billions of dollars to go into the archaic reactors at SRS, at a time when Americans are clamoring for	Please see the response to Comment A-06-07 on the changing world geopolitical situation.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	nuclear weapons cutback, clearly indicates that DOE interest does not lie with the American public. Recent surveys say Americans are ready for peace and tired of blowing money on an arms race. Let's remember that Chernobyl and Three Mile Island, involved unforeseen — that would have been considered incredible before the accidents. \$244,000,000,000 would go a long way for social programs this country desperately needs. Restart of SRS is nothing but an environmental animal and human suicide. Thank you.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-79	STATEMENT OF FRANKLIN KURTZ	
	MR. KURTZ: My name is Franklin Kurtz, I come as a private citizen.	
	I have been living in Aiken County a little over 30 years. If somebody told me 25, 20 years ago, 15 years ago, I would be here tonight I would have told them they are crazy. All I know is what I read in the papers, as someone said before me.	
A-79-01	In it's current condition, I believe the Savannah River Site should not be restarted. I think it is a danger to our lives and to our environment. Radioactive tritium has been released into the air, contaminated ground and water is already on the site and could find it's way to our drinking water. — To kill and injure, not only people at the plant, but also the surrounding population. Remember Chernobyl.	Please see the responses to Comments A-34-09 on safety and A-30-03 on environmental monitoring.
	The Energy Department is playing Russian Roulette. The Russians played it at Chernobyl and lost. A major accident could happen here. James Watkins appears to be putting his priority in the wrong place. If we are a government that really cares, why are we planning to restart these ancient reactors and risk the lives and health of thousands of people.	
A-79-02	Let's put our money in the right place by cleaning up the plant first, then starting out fresh with a site that can operate without risk and is in — in the surrounding population.	Please see the response to Comment A-09-02 on waste management and environmental restoration.
	Contamination has to be stored for thousands of years and monitored on an ongoing basis. Equipment failure and human error are familiar in the realm of technology. Nuclear plants are not immune. Who can say that what the end result of Three Mile Island will be.	
	There has been such a large credibility factor in the past, many of us do not know who to believe anymore. Nuclear plants must be held responsible for their operation. Telling us that certain problems do not indicate any reduction in reactor safety is like a fox telling the chicken that everything is going to be okay.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	SRS should be monitored very closely and all problems should be corrected at once and at any cost. If they cannot do this, then it should not be restarted.	
	Again, I say let's put our money to work cleaning up rather than starting up.	
	Thank you.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-80	STATEMENT OF WILLIAM BRADLEY	
A-80-01	MR. BRADLEY: Thank you. My name is Bill Bradley; I am from Atlanta; I am a private citizen. We have lived in the shadow of this dangerous radioactive gas factory for generations. Recently, the public awoke to the terror, and the production of the poison stopped. Now, we are facing the proposal to start it up again. If we agree to do this, the streams will boil again, and the air will be heavy with smoke; our ground water will be contaminated, and we will have to live again in the fear of a catastrophe.	Section 4.1 of the EIS addresses, analyzes fully, and bounds the environmental impacts of the continued operation of K-, L-, and P-Reactors, including the resumption of production after an extended outage.
A-80-02	The EIS acknowledges that our needs for plutonium and tritium could decrease greatly in the future and that the proposed action is based on the short-term need for nuclear weapons. What is the short-term need? Are we on the threshold of some great war that will exhaust our current vast supplies of nuclear bombs? Clearly, the answer is no. We do not need more tritium now and, very likely, we never will. We certainly have time to look for alternatives. Thank you.	Please see the responses to Comments A-06-01 on the need for tritium and other nuclear materials and A-06-07 on the changing world geopolitical situation.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-81	STATEMENT OF DAVID FILLER	
A-81-01	MR. FILLER: My name is David Filler. I speak for myself in behalf of Savannah River Site. <i>I am an environmental chemist. I have been in that field for a number of years. I would like to say that I am impressed with the efforts of the upgrades that the management, the operations, and the environmental monitoring that are going on out at the plant. I think the things that we heard in the media that Admiral Watkins and DOE are producing lots of rhetoric and no action simply are not true.</i> The nuclear industry is one of the most highly regulated and scrutinized industries around. Certainly, SRS has had its share of scrutiny, evaluations, and reviews. I would like to say that there are a lot of things that troubled me a lot more than the presence of Savannah River Site. I am more troubled by the Acme Paint Shop coming down the highway. I am more troubled by railroad chemical tank cars snaking through my neighborhood. I am more troubled by agricultural chemicals that have been dumped on our lands for so many years and added to our foods. Many people probably are not aware of the fact that the streams and rivers nearby universities and hospitals commonly —. I have worked in hospitals and universities and I have seen all kinds of radioactivity — dropped down the drains. Certainly there is waste at Savannah River Site. And as a gentleman said earlier, the waste is there, we know about it, and is well taken care of and watched. We are not going anywhere. It is unfortunate the waste is there but at the time this waste produced, they were handled in the way that people knew best at the time. They were using the technology available at the time. Today, we know better, it is 30 something years later. <i>I think a good question we have to ask ourselves, how many times has the public actually been harmed by the activities at Savannah River Site? That is a good question if you really think about it.</i> As to the question, do we need SRS? I think so. Nobody likes war or weapons. If we could, we all do away with war and weapons	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	forever. But that is not reality. History has demonstrated that nations who allow themselves to become weak have lost their freedoms or disappeared entirely. The recent events in the Soviet Union have happened very quickly. Many of these events could be reversed just as quickly. And then, too, the Soviet Union is not our only threat. There are many other nations that have nuclear weapons. There are many other nations developing nuclear weapons.	
	I have observed, in these hearings and, also, in the media, many people and many groups that come forward and criticize the government and DOE. I would like to remind these people how and where they got some of these freedoms to stand up and state their opinions about the government. In years gone by the western world and the free world had strong militaries. We had powerful weapons. And we had people who had the initiative to stand up and do what had to be done to protect those freedoms even though sometimes it was an unpleasant task. I think today we still need SRS to protect those freedoms and we still need people with initiative to stand up and do what needs to be done. What needs to be done is to get in there and clean up those wastes and take care of them. To get in there and improve the technology. I think what we need a lot less of is people who go around offering nothing but criticism and sensationalized claims of things they really do not understand fully.	
	I think that those kind of people who had their — in years gone by — may not have been here today to freely state their opinions.	
	Thank you.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-82	STATEMENT OF RONALD KNOTTS, SR.	
	My name is Ronald Knotts, and I represent myself.	
	Mr. Cumbee, Mr. Patterson, ladies and gentlemen of the audience; I come here tonight over a concern. The last several years as a resident of Williston, South Carolina, and having been there as a resident, when the Savannah River Plant was first placed under construction.	
	I want to compliment and congratulate the SRP employees on the contribution to the security of the United States and the free world that they have given over the last 35 years. But time is a controlling factor. Times have changed, including the education of man. At one time, we had to have a nuclear arsenal to show that we were superior. But now, superiority can be accomplished more through friendship and love.	
	What are the priorities of our country at this time, the United States of America? Is it a priority of trying to accomplish peace in the world or to show our strength to take advantage of others?	
	You people in the audience, could you mash the button to launch the ICBM and destroy a million plus lives? My understanding is that we have such superiority now that there is no doubt in anyone's mind that no nuclear will ever occur.	
A-82-01	Responsibility. Restarting the SRP. Should it be done? Or should it be closed down, or should it be put on hold? I have a book here that I received last year from the — State Department of Health and Environmental Control. Accidents can occur. This shows — tritium release — water. There was one accidental release of tritium from the Savannah River Plant — health and emergency response team collected vegetation samples which were analyzed for tritium. On — dates collected south of the location the tritium levels — July 31, 1987. And my understanding in reading this book and try to comprehend it, your average levels were supposed to be about 1,200 to 2,000 to 4,000 PCIS. Well, at the Bowman County Airport, it was 33,134. At Bowman County intersection of road 278 and 164, it was 2,069,495. At U.S. 278, SC 781, 27,942. Tell me what will this tritium release do to those people over which the	The incident cited in the comment was reported in the <u>Savannah River Plant Environmental Report for 1987</u> (DPSPU-88-30-1), which indicated that the release from a line break in H-Area was approximately 172,000 curies, or less than 1 percent of the expected annual average release from the operation of K-, L-, and P-Reactors. The path of the release was monitored by both SRS and SCDHEC, and the maximum calculated dose to an individual at the site boundary from the tritium release was 0.02

C-1005

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	main plume occurred? It occurred right over the Williston development area where the industrial division is there. It went from there on into Springfield and, my understanding, on into — at lower levels, than those recorded here. If the SRP should be restarted again, my opinion is that those in favor of the restart and in favor of showing the world their superiority, as in ornaments, not in peace and love. I think that they should be recorded as putting their names on the line and be held accountable as to what the action will bring about. Then those people that would preferably hold things, the old saying, haste makes waste. It appears now that we are going for a peaceful solution, maybe peace for the entire world. Thank you, very much.	mrem, which became lower at greater distances from SRS.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-83	STATEMENT OF MARY SEYMOUR	
	I have lived in Aiken about 15 years. I am a life-long resident of the State of South Carolina; my entire family has come from the State of South Carolina since pre-revolutionary times. So I certainly am not an outsider.	
	When I came to the scoping hearing for the EIS, I asked the officials in charge why we keep coming up here time after time and asking y'all to put things in the EIS and address certain issues, and then they never came out in the EIS.	
	The specific things I was interested in was the need for tritium, other technologies that could be used to produce the tritium if it were, indeed, needed. The health effects on the general population that no health studies have ever been done; it is all theoretical. And the economic impact, not only of the jobs that are created by the plant, but what I would consider negative economic impacts of the land speculation and the incredibly raised taxes that goes on in Aiken County.	
A-83-01	And I was assured by one of the gentlemen in charge that they listen to everything that the public had to say and that they would try to address these issues. Well, of course, in your draft here, the need for tritium is classified. So we still do not know if we need the tritium or not.	Please see the responses to Comments A-06-01 and A-70-02 on the need for tritium and other nuclear materials and the review of classified information.
A-83-02	The other technologies get two paragraphs and they are just summarily dismissed with, well, these just are not reasonable alternatives. It does not really say why; it just says they are not reasonable.	Section 2.4 of the EIS describes alternate sources for the production of tritium; they include the potential for the use of other reactors as well as other technologies, some of which still require more research and development.
A-83-03	The health effects on the population, once again, it is all this theoretical stuff, these dose responses. There has still not been a health study done of the population in the CSRA. The nearest thing to a health study I have seen is that book that came out a month or so ago that went on about the birth defects and when the releases back in the early 1970's and then, of course, DOE comes out and says, oh, well that is just not true. Well, I do not see how they can tell because they have never done a health study, nobody else has ever done one. So as far as I can see that states.	Please see the response to Comment A-63-05 on studies of health effects in the SRS vicinity.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-83-04	And all that is in here about the economic impact is this constant threat about we will lose 9,600 jobs in the area, et cetera. And from what I heard earlier, there is no reason — I mean, the thing has to be cleaned up. Y'all just cannot just leave all that out there. And there would be plenty of jobs created by cleaning it up. They might not be as high paid jobs, but that is the other kind of negative economic impact on this area from the bomb plant is the pay is so high that it has kept a lot of industries from locating here. Recently there was a cotton mill that went up to Greenwood, due west, area because they cannot afford to match the salaries. I mean, I am all for high salaries, that is fine, but when they drive other industries out, then that is not good for the area.	Please see the responses to Comments A-09-02 on waste management and environmental restoration and A-34-17 on alternative site employment options.
A-83-05	The other thing, and y'all that do not live here might not realize, the tremendous land speculation that is going on. And our taxes, our property taxes, went up like hundreds of percent last year. And then all these people come in — and I am all — it if fine new people coming into an area, that is fine, if they want to live in the area and live like the rest of us. But these folks come from up north and they want giant sewers and they want all of this police protection and buses and all this kind of business and they expect us to pay for it. And schools. New schools, we got to build all these new schools. And then the bomb plant — they do not pay any taxes on the land. They took all this land Aiken County and they do not pay any taxes on it. They give us a fee in lieu of taxes, and it really does not make up for the impact of it at all. So that certainly should be raised. I do not think this Environmental Impact study is — it is not enough. It did not address all the issues. And I think it should be redone and these issues that I have brought up, and others, should be added into it before y'all think about restarting these reactors. Thank you, very much.	In addition to the fee paid by SRS in lieu of taxes, the SRS operating budget pays for materials, labor, and equipment. DOE estimates that 15 percent of total costs is for materials, 75 percent is for labor, and the remainder is for equipment. For a large manufacturing complex, the labor and materials expenditures generally go into the local economy, and equipment is purchased from outside the local area. Labor expenditures need to be adjusted for taxes, social security withholding, and savings. This is usually around 30 percent of total payroll. Thus, a general estimate of the percentage of the SRS budget going into the local area economy is approximately 70 percent.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-84	STATEMENT OF TOM KING Tom King, here representing myself. I am an Aiken County resident, been here for a little over 15 years, born and raised in the south. I just wanted to make a couple of comments. One thing I would like to address is the things that have already been said. One gentleman made a comment here, for the record, that he was more scared of gasoline trucks on the highway and things like that nature; chemical spills from the industries here. The SRP worries me a little more than that. There is a possibility of Chernobyl here if things were to get out of hand, and some of the spills here getting into the ground water can have a lot more impact than a restricted damage that can be done by small gas trucks and things of that nature. In other words, we are talking accidents here with the potential for destroying the environment for thousands of years. So I think this requires very serious consideration as to the health effects that starting this plant could have on us. I am not here running for office; I am not a realtor; I am not a land speculator; I do not work at SRP and I am not on their retirement system, and I am here on my own free will. Although I do receive some financial benefits from SRP being here, along with many other people, I am worried about some of the negative impacts Ms. Seymour was talking about. Our taxes and our government here is slowly being changed to where you hardly recognize it anymore. The thing that bothers me right now is this thing is turning into kind of like a — project. I am not yet sure by any of the reports that I have read that we need the plant. If we do need it, I think that a health study should be done before we crank this thing up. Like I said — so far has not been done on the individuals living in the area around here. It is one thing for the government to take a study of the employees that are working out there. But to be honest I do not feel safe with just that type of study. I would like to see an independent study done of the surrounding area and the health effects over the last few years. Excuse me, I have got a sore throat.	Please see the response to Comment A-31-03 on Chernobyl. Section 4.1.3 of the EIS considers severe accidents and their health risks; none of these would produce any substantial contamination of SRS groundwater. Please see the response to Comment A-63-05 on studies of health effects in the SRS vicinity.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-84-03	Another thing — is that, as in the study, it is indicated this is a — the plant is located on an earthquake fault, and I do not think that has been addressed very well. The construction out there, from what I understand, what limited material there is available, indicates the plant is not really built to withstand a possible quake that we could have in this area. And it is a distinct possibility. Basically, again, I am saying that if, you know, if the plant must be started up again, we need it for some reason, we are threatened, and we do not have those stockpiles of tritium and we need it for defense, I certainly know we have to do what we have to do. But let's do take into consideration the health of the people around here. And that is about all I have to say. Thank you.	Please see the response to Comment A-57-01 on seismic upgrades.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-85	STATEMENT OF CHRISTOPHER LUSTING	
	My name is Chris Lusting; I represent no organization.	
	I am here to speak out against restart of the Savannah River Plant nuclear reactors. My reasons are few, but they are strongly felt. Number one, the money. The money spent on making these death bombs is extreme. For example, seven and a half million dollars was paid simply as a bonus to Westinghouse for their so-called improvements on this facility. One and a half billion dollars was spent annually on the running of the plants. This is insane.	
A-85-01	For this debtor nation that we are, I do not believe, we, as taxpayers, should be forced so much to so few, that could hurt so many. I now ask our government, our people, and the company of Westinghouse to not only keep the reactors shut down, but to start on the cleanup and the damage that has already been done. As for the bonus received by Westinghouse and for the taxes that I do pay, I ask my share be given to those that starve on this planet, to house those needing shelter, and to protect the environment that has not already been destroyed.	Please see the responses to Comment A-09-02 on waste management and environmental restoration.
A-85-02	This brings me to my second point, the environment. The people who need or want facts on why the reactors should remain closed, I give you these. Number one: at least one of the reactors lies on a fault line. Man has not yet gained control over the acts of nature; therefore, whatever safety precautions these so-called engineers would be rendered useless if an earthquake were to split a reactor or reactors in two. An extreme, you may say. Possibly. A possibility, I say, yes.	Please see the response to Comment A-57-01 on seismic upgrades.
A-85-03	Now, let us deal with not the extremes. Number one: the fact is that plutonium-238, plutonium-239, are being released into both air and the water. The half-life of plutonium is, I believe to be 66,000 years. It could be 100 years and this would be strong. What does this mean? It means that whatever plutonium is released, no matter how slowly, or how small, it just plain all builds up. If the reactors remain closed and a cleanup is started, the effects remain minimal. If the reactors reopen, the plutonium continues to be released, continues to build up in our water supply until our water becomes useless. At which point, we become the people of the	Section 4.1.6 of the EIS presents the releases from the continuing operation of the SRS reactors and

C-1011

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	southeastern desert. If this fact does not alter the thinking of the people who continue to be for reactor start-up, for those that work at the plant, from president level to janitorial, to consider another line of work, then I simply pray for us all. As a closing statement, I will say that sooner or later this world will be free of nuclear weapons, free of the Savannah River Sites; and, at that point in time, this world will be a happier place. There will be less hunger, less cause for war; there will be more money available to the general good health of this planet and her people. There will be more loving people and more loving places of this entire population to enjoy. Let us please, for all living creatures created, make the Savannah River Site an example to future generations and the generation of our own a place where man's greed is overcome by man's love and not add to the list of many for man's greed, which causes unjust pain to the free and the innocent. Amen, and I thank you.	their support facilities, including releases of plutonium-238 and -239. As indicated in Section 3.7, cumulative releases of plutonium-238 and -239 over the past 36 years have not resulted in air or drinking water even remotely approaching their respective standards, and there is no basis to expect that performance to change in the future.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-86	STATEMENT OF LOIS MCMILLAN	
	I want to tell Mr. Peterson that I wish I had spoken in Columbia. I feel like Daniel in the Lion's den down here in Aiken County. I have a letter to Mr. Watkins that I am going to send to Mr. Wright for transmittal. Dear Mr. Watkins: To quote Mr. William J. Riley, "Lawyers, by nature, are prone to believe that accurate forecasts was when God told Noah that it was going to rain." Hence, please accept my apology if I insult you and your agency by refusing to believe that the restart of the K-, L-, and P-Reactors at the Savannah River Site will have "minimal insignificant, or negligible impact on the environment here in South Carolina." Not only do I not believe your agency's assertions in this regard, I also believe that the Department of Energy has gone out of its way to lull the citizens of this beautiful state into believing that the DOE has the citizen's best interest at heart. And that the restart is necessary for national security. Being part of the generation that lived through the Vietnam conflict, as our euphemistically referred to the war, I am probably one of the most skeptical of the skeptics when I hear something being referred to as being in my best interest due to national security. Never-the-less, despite my skepticism and being an attorney, I firmly believe in the ultimate good in every person. And that even a bad decision made by a good man can be appealed from any circumstances. Therefore, I have traveled from Columbia to Aiken just to appeal to your hearing officer, to you, via this letter. Please be a just man and inform President Bush that he can, he must, stop the travesty which is about to befall our beautiful state. Tell him that he is very familiar with the territory near the SRS because his grandfather once owned property within 2 miles of the gates. He claims to have wonderful memories of his visits to Snelling, South Carolina. Tell him that the place he remembers is	

C-1013

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	just as wonderful now as it was when he was a child. That my husband and his siblings grew up in that beautiful old home place. Remind him that the SRS is built on a site underneath which the Tuscaloosa Aquifer runs at a depth of only 600 feet.	
A-86-01	On top of this underground aquifer, which supplies water for South Carolina, Georgia, Alabama, and Florida, sits approximately 35,000,000 gallons of toxic radioactive waste which, due to the shortsightedness of one of President Bush's predecessors, cannot be recycled and, hence, not disposed of. With this in mind, how can President Bush, you, Mr. Watkins, or anyone else in the DOE have the audacity to insult the intelligence of South Carolinians by telling us that your actions will not impact on our environment, but, just in case you are in error, the impact will be statistically insignificant. Please meet with your Mr. Peterson, the gentleman who was at the hearing, and ask him what the people were like who attended the hearings. Ask him to describe them to you. He can vouch for what I am saying when I say that I walked into the hearing room in Columbia and I have never been so stunned in all my life to see middle-aged ministers, elderly school teachers, young fathers with babies in their laps, and the teenagers who stood up to speak despite fears that what they said in public might come back to haunt them in 10 years and, despite their concern, that their world might not be here in 10 years if you continue on the road you are on at the moment. All of these people, together with the long-haired activist and people like me, a middle-aged mother and professional, were there. As were the medical doctors, the statisticians, the college professors, and the like. You are not dealing, Mr. Watkins, the fringe elements of our society. You are making decision which impact every citizen in our state. Do not pass the buck. Chernobyl proved that the buck stops with you and your boss. It is my understanding that on April 26, 1986, when Chernobyl exploded and melted down, that Mikhail Gorbachev not only put an immediate stop to the construction of five nuclear powerplants, he also stopped the production of plutonium and U-235. I am informed that he also withdrew four older, nuclear subs and evacuated in excess of 235,000 people. These are the ones who were not killed instantly.	Please see the responses to Comments A-52-02 on the aquifer beneath SRS and A-63-03 on high-level waste management.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-86-02	As you can see, it may be that the Tuscaloosa Aquifer is the least of your concerns. You cannot ignore the ramifications of what you are doing. Let no one try to convince you that if South Carolina and Georgia become the next Chernobyl, that our blood will not be on your hands. You alone will be responsible. You have the record before you through these hearings and scientific evidence to see that your decision cannot be made in a vacuum and can only be that these reactors must not be restarted. Thank you.	Please see the response to Comment A-31-03 on Chernobyl. Section 4.1.3 of the EIS considers severe accidents and their health risks.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-87	STATEMENT OF JANET SCHLAFER	
A-87-01	My name is Janet Schlafer; I belong to a very big organization, it is the organization of brotherhood, the brotherhood of man, brotherhood of women. I belong to the people of the United States of America for which our Constitution was written. I have just been elated tonight, and I said I cannot go home unless I say something. I would like to believe that our being here is going to make a difference. History and our government has proven on many times that because of national security, we, the people, have not been informed correctly. I seem to be feeling, and it is just a presumptuous thing on my behalf, that activity has already at the Savannah River Plant. And my being here tonight is not going to mean a hill of beans. But, of course, if that is what happens, I also believe that the Savannah River Plant and the bombs that it produces is genocide. I have grandchildren and I have children. I chose to be a mother, but I did not choose for my grandchildren to have to live under the threat of the bomb. And I have got a few more good years left in me. I will tell my grandchildren when I get back home that I came and spoke for them. But I want them to know that if bombs ever hit, I tried.	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-88	STATEMENT OF MARK TUCKER	
A-88-01	Good evening; my name is Mark Tucker, and I represent only myself and my wife. I come from Charleston, South Carolina. I am a teacher there. I teach 15, 16, and, 17-year-old young people. They are very intelligent young people. They are very concerned. One of the first things I asked them when we discuss the environment, I say, "Which is more powerful; money or beauty?" And these are urban kids; they know from where they speak. And they think about it a little bit and they say, "Mr. Tucker, money is more powerful." I say, "Really?" They say, "Yes, sir. I see it all the time. Money always wins out over beauty." "Well, how do you know that?" "Well, just look at what they do down at the park. They cut the trees down when the power lines need to go up. Oh, just look what they do down at the marsh. What they fill in and how they build in the name of progress." I say, "Well, does it have to be that way?" They do not know; they are confused. Do I offer them alternative? I say, "No. It does not have to be that way. Beauty can be more powerful than money. But the people have to demand that beauty be more powerful than money. The people united will never be defeated." This sets their hopes up. I want to do that for them. And, then, we discuss nuclear power and its benefits and its problems. And we discuss the SRP and its benefits and its problems. And I tell them, keep up with the news. In October some very powerful men are going to be deciding "is money more powerful than beauty." On my ride up here, I was fortunate to come up here during the day time. My wife and I were admiring your beautiful City of Aiken, the magnolia trees, the oak trees, the wonderful trees." My wife and I survived a large, natural disaster in September. You all know about it; you may not have experienced it like we did. We knew it was coming. We saw it from a long ways away. So we ran, just like most people did. We were lucky. We got to come back; and as we chainsawed our way down our street to our home, and we saw that our house relatively minor damage, we cried. We stood in the yard and we hugged each other and we cried.	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-88-02	I hope for the sake of the people of Aiken that an accident like Chernobyl does not ever happen, because I think the people will see the reverse process. They will cry. But they won't cry because they can come back to a home and live again. They will cry because they will never be able to come back to their home again. And one last note, it is an interesting note, and I hope I am right. Not a single woman tonight has spoken in favor of starting the SRP reactors. Thank you.	Please see the response to Comment A-31-03 on Chernobyl.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-89	STATEMENT OF ANDREW VARNER	
	My name is Andrew Craig Varner.	
	Thank you for letting us tell you our opinions. It is a shame the Department of Energy had to be sued to hold these hearings.	
A-89-01	I live in Lexington, South Carolina, so you probably why I came to Aiken. When Dr. Gordon Thompson stated the — County Council Emergency Planning Hearing, then the hypothetical accident where half the core materials are released, people living 60 miles or more from SRS would run a significant risk of thyroid cancer. We might not be able to return home for 30 years. I realize this plant is endangering me.	Section 4.1.3 of the EIS presents the risks of design-basis and severe accidents. The latent fatality risk (which would include thyroid cancer) from such accidents at 16 kilometers (10 miles) from the SRS boundary is less than 7.2×10^{-8} per reactor-year (see Table 2-3).
	I have heard speakers come before you and call, who are opposed to the restart, fanatics. I am not a fanatic; I am not a radical; I am concerned. We have been told that we must make fear the U.S. When we dropped two nuclear weapons on Japan, people feared the U.S. We started a disaster called the arms race. Now, 23,000 nuclear warheads in the future, the fear returns. But this time, we have to stop the Frankenstein we have created.	
	These reactors are in their 30's and 40's. The history of accidents at SRS have been hidden from the public by the DOE. The weapons are made by the Department of Energy and the Department of Defense; they would not dare say that they are not safe. I am not saying that no one has said these reactors are not safe. People questioned we environmentalist got our information. I am not going to tell you the government how the — are planned. I am going to let the government do that for you. I have got some kind of interesting facts about the plant.	
	All I have seen here are — except for one sheet of paper, all I have seen are Department of Energy references. Let's see what some other government agents had to say.	
	1978: The Armed Service Committee Panel reported: — obsolescence of the nuclear weapons production complex. The Department of Energy acknowledged in its fiscal 1981 budget request to Congress that degradation was quite serious and that radiation exposures to personnel were reaching unacceptable limits.	

Table C-8. Public Comments and DOE Responses

Comment
Number

Comment

Response

In May of 1981, officials discovered 20-year-old crack — reactors and drain pipes are designed to move contaminated cooling water in the reactors. Failure of these pipes causes backup of contaminated water into the reactors.

In August of 1981, the General Accounting Office said that, "better oversight needed for safety and health activities at Department of Energy's nuclear facilities"; they found that the Department of Energy was not providing emergency preparedness guidance, taking, "very limited, if any, actions to assure the older facilities meet current safety criterion standards." And stated that Department of Energy has "little assurance" "the information concerning radiological releases from its facilities were accurate or reliable."

In June, 1985, they shut the C-Reactor down because they had found the crack during normal cycle releasing up to 18 gallons a day of highly radioactive water. People are talking about they feel safe with the reactor; how can you? I do not see it.

Eventually, 12 cracks were found; some of them were up to 45 inches long. They decided to abandon trying to restart that particular reactor.

Later on, in June 1986, General Accounting Office, again, Safety Analysis Review for Department of Energy's facilities can be improved saying that the whole process was done by self-regulation and that they used totally different ways to analyze it. One review analyze consequences were the worst earthquake in 840 years, or the next 8,000 years. Regulating themselves has caused such risk.

October of 1987, the National Academy of Science says, "The reactor safety report found that the Department of Energy does not know how reactors can behave during an accident. Filter and confinement systems might not. Reactors show signs of acute aging that can affect safety and a high degree of confusion of safety objectives exists."

March 1988, Richard Starvevsky, the Deputy — or Secretary for Environment, Safety, and Health, called SRP's earthquake program inadequate.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	May 20, he sent a letter to Paul Casper, "It appears that seismic upgrading that has been accomplished and is now under way, has been a piecemeal, largely reactive response that has been seriously neglected."	
	On August 7, they attempted to restart the P-Reactor but were unable to do because helium had built up in the core. They continued to pull out control rods raising the power even though the reactor was not responding according to how they thought it would. Eventually, the Department of Energy ordered them to close down reactor, August 7, and investigate.	
	September 30, 1988, Congressional Committees released a 1985 SRP memo describing numerous reactor accidents at SRP between 57 and 85. These accidents were among the most serious ever documented at U.S. nuclear reactors. Several involved fuel melting.	
	October 1988, Department of Energy contractor, Nuclear Utilities Services report said that SRP suffers from "a flawed management culture that undermines safety, impeded communication, and deviates from practices common to well run nuclear plants." The report stated that serious problems exist at every level of SRP's management reactor staff.	
	December 13, 1988, Energy Research Foundation, and National Resource Defense Council, and Green Peace file suit against the Department of Energy to compel the completion of the Environmental Impact Statement prior to restart of any reactor at SRP.	
	December 13, 1988, new cracks reported which affect the main cooling systems of the L-Reactor. The cracks occurred at the base metal and were not associated with any wells; Department of Energy officials said that it — improper — techniques.	
	One day later, December 14, Advisor Committee on Nuclear Facility Safety rejected the Department of Energy's restart plan for K-Reactor, saying that it is inadequate inspections and questions about power level and calling it "a blueprint fraught with inadequacies. We have broad concerns regarding safety philosophies that over all criteria for restart and management."	
	December 18, 1988, South Carolina Representative John Spratt of the House Armed Service Committee said, "My understanding of the	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
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need for tritium is that it is not that urgent. With 20,000 warheads we really do not suffer in the short run."

The list is endless. I have got —

I only represent one organization; I represent my children, my grandchildren, and their children. I have inherited the legacy of the Cold War. It is time we stopped shoveling money in this environmental — these dinosaurs are not subject to the government's own regulations for nuclear reactors. I am not saying these things because I want to bring the American government to it's knees. I am doing it because I love America, and I want to see it. I hold it as my heart's reason for wanting this country to remove the SRP. I do not want it poisoning the systems in this country. Public safety is the most important part of national defense.

Thank you.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-90	STATEMENT OF MOSES TODD	
A-90-01	My name is Moses Todd and I basically represent myself.	Comments noted.
	I know that the hour is getting long and a lot of folks want to go home, but I would like to say to Mr. Patterson and Mr. Cumbee, that over the last two — one being in Savannah and the other in Columbia, that I feel that you gentlemen has taken quite a bit of abuse in the DOE and I would like to commend you for handling your cool especially the one situation I can think of in Columbia where you and other DOE officials was practically accused of being on drugs.	
	And I would like to use my 5 minutes talking about the safety of the reactors. I am not an expert on the reactors at SRS but I do do some reading, and I am not as articulate as some of the speakers have been before me, but I try to speak from basically sense and common knowledge. And I would like to say, also, that unlike one individual that said he was not a politician, I am a politician running for the fifth district commission seat in Richmond County.	
	And if I may make an observation, it is that I note that between the three — the opposition time — like some of us politicians, depending on what crowd we were in front of, we had a different message. But I do note that the overall message has changed to the need of SRS. And I say that we have a need as long we have approximately a billion Chinese over there in the East, or Far East. And as long as there are communists in the world. I cannot use the phrase, the one-liner, that I would rather be red than dead. I do not think it is practical. But I can say that I would rather be dead than to be a communist.	
	And to get on with the arguments that has been used from place to place, basically I feel that the organization that is opposed to the restart feel that the folks in the great City of Aiken is not as gullible as those possibly in Columbia and Savannah, because there was some really off-the-wall reasons for not starting the reactors and some of the sections of what the situation were here in Aiken.	
	As I set and listen, I would have believed that everybody around the Aiken — area would actually be blow in the dark like the	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	gentlemen eluded to the deer at night hunting. We were told basically that the streams was polluted and the fish was deformed. That the animals was deformed. I was not at SRS today, I was in — but I was there yesterday. And my statements have been all along the common sense approach to the environmental situation at SRS.	
	We have been told that there is no birds. I know better. We have been told that there is no vegetation, green vegetation. I know better. We have been told that the trees is dead. I know better. We have been told that there is no insects. I know better. So the — on and one, you know, the environmental effect, the farther you get away from Augusta, and Aiken — Avenue. But when we arrived here, I understand the argument is need.	
	I am not going to try to evaluate the need for the national security of this country. And I do not think that it should be in this Environmental Impact Study either because there are too many Mr. Conrads out there that has just been convicted of selling secrets and we definitely do not need to put the secrets in the hands of some folks that I have — privileged to meet in the last few weeks of this country.	
	I will have to rely on the experts to decide what the need is, and trust them with the secrets as far as that need. So if the President signs these stockpile whatever, then I will have to have the trust in that President whether I support him politically or not. Memorandum is the word.	
	But basically what I have seen is a lot of half truths, misinformation, and misstatement of the facts in these hearings by the opposition basically. And what I would like to see more of is dealing with the facts. There is nothing wrong with being on a mission to win an issue as long as you give the facts as they are.	
	I would assume that the opposition knew about the alleged or fictitious — then SRS would probably be blamed for him. too. But I gullible as those possibly in Columbia and Savannah, because there was some really off-the-wall reasons for not starting the reactors and some of the sections of what the situation were here in Aiken.	
	As I set and listen, I would have believed that everybody around the Aiken — area would actually be blow in the dark like the	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-91	STATEMENT OF DALE PROUT	
A-91-01	Thank you. I live here in Aiken. I have lived in the CSRA since 1953, I have not always been here; I spent a little time in Southeast Asia, and other places, fighting for my country as I am sure some of you people have had some your relatives fighting for your country also. My relatives have been in America since 1620. As I said, I have had relatives in this country since 1620. That is when my relatives came to America. I have also had members, relatives, that have fought in every major war that the United States has had. The last relative I had that died died on the U.S.S. Arizona at Pearl Harbor. And, as you recall, that infamous day when we were not prepared. I want us to be prepared from now on. I do not want that to happen to again. I do not want anything like that happen to my kids. I want to make sure that we have strong stockpile of nuclear weapons if you want to call it that. That is fine with me, whatever you want to call it, I want to make sure we have got it. I do not want to be unprepared again. Out here at the bomb plant, that is what they make, that is fine. We have had enough Environmental Impact Studies. All the studies that I have seen, we have had enough of them. They are final; let's get the reactors started back. Let's get this new production back. If I did not live here and they were having these reactors in another area of the United States, I would say let's start them there. But as I said, I lived here, I have — safely in this area since 1953. I believe that Westinghouse and its predecessor, Du Pont, has run the Savannah River Plant safely. I believe that is a proven fact. I have heard the times that I have been here tonight that repudiated by individuals who, to me, I just do not think they know what they are talking about and I sometimes wonder what is behind some of their acts. I hope that they are well — But I say again, and I say this — This is the reason that I came forward is that I am in favor of the three reactors. I say let's get them restarted, and I thank you for you for your time.	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-92	STATEMENT BY SENATOR STROM THURMOND (R-SC) IN SUPPORT OF THE DRAFT EIS "CONTINUED OPERATION OF K-, L-, AND P-REACTORS SAVANNAH RIVER SITE, AIKEN, SOUTH CAROLINA." AIKEN, SOUTH CAROLINA, JUNE 8, 1990. Ladies and Gentlemen:	
A-92-01	A recent newspaper article announcing this hearing indicated that world events appear to be working against the Department of Energy with regard to the restart of the Savannah River Site reactors. I hope that better judgement will prevail and that the events of the past year will not be used as a basis to determine whether or not the Department of Energy should restart the reactors at the Savannah River Site. Our nation's reliance on a nuclear deterrence has contributed to world peace for <u>over 40 years</u>. It has, in my judgement, played a <u>crucial role</u> in the demise of the Warsaw Pact and the shredding of the Iron Curtain. The reactors at the Savannah River Site have been one of the <u>key facilities</u> in building this great deterrence and are crucial to maintaining it. Although the Soviet conventional threat is on the decline in Eastern Europe, its nuclear forces <u>are not</u>. All indications are that the Soviet Union is relentlessly pursuing modernization of its nuclear forces. Last year, the Soviet Union produced <u>140 new ICBMs</u>; the United States produced only <u>12 ICBMs</u>. The Soviet Union currently has 2 types of mobile missiles, the SS-24 and SS-25; the United States Congress is still <u>debating</u> whether we should build <u>any mobile missiles at all</u>. Most importantly, the Soviet Union is vigorously modernizing those weapons allowed under the provisions of the Strategic Arms Reduction Agreement. Under that agreement the Soviet Union will still maintain <u>over 6,000 nuclear warheads</u>—a significant threat by any standard. If the United States is to maintain its nuclear arsenal, we must restart the reactors at the Savannah River Site <u>as soon as possible</u>. During the past two years we have relied on interim measures to provide the critical tritium gas essential to our nuclear warheads. We have reached a point where these interim methods <u>will no longer provide sufficient tritium gas to ensure the reliability of our nuclear weapons</u>, and we must now begin to produce tritium. The Savannah River Reactors are the <u>only U.S.</u> sources of production available in the near future.	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	The Department of Energy, under the able leadership of Secretary Watkins, has vastly improved the reliability and safety of the reactors. As the ranking member on the Subcommittee on Strategic Forces and Nuclear Deterrence, I am confident that all measures have been taken to ensure the well being of the workers and the environment at the Savannah River Site. One of these measures is the Environmental Impact Statement that is being discussed this morning. In my judgement, it fully addresses those concerns raised by the citizens of South Carolina.	
	During this and the previous hearings on the draft EIS, I expect some issues will be raised that may warrant further investigation. I assure you that the Department of Energy will review those issues and resolve them before a final determination is made on the restart of the Savannah River Site Reactors.	
	I appreciate you taking the time to come to this meeting to present your comments on the Department of Energy's draft EIS. This is an important meeting not only for the people of South Carolina, but also for a <u>continuation</u> of our nation's <u>vital policy of nuclear deterrence</u>.	
	Thank you.	
	End	

C-1027

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-93	STATEMENT OF DONALD B. ZIPPLER 714 HAMMOND DRIVE NORTH AUGUSTA, SC 29841 JUNE 8, 1990	
A-93-01	My name is Donald Zippler, I have lived in this area for 37 years and I am 100% in favor of the restart of K-L & P reactors. These reactors have been operated safely for many years. Operating incidents reported by the News Media have been blown all out of proportion. Obviously some actions taken in the past were based on information available at that time and not todays state of the art technology. However, actions being taken today are in keeping with todays technology. I feel that the millions of dollars being spent to prepare an environmental impact statement to restart existing reactors which have a history of safe operation is a waste of taxpayers money. The nations nuclear needs should not be determined by a vocal few. Those who are adamant for a EIS should be required to foot one half of the cost for the study. I doubt that the opposition will ever be satisfied with any conclusion approving any restart. In conclusion I say let's get the reactors up and running again. I believe the vast majority of people in the CSRA are not concerned with any adverse impact of the reactors but are concerned with the costs and delaying tactics by a few outside groups. It is a fact that the hundreds of knowledgable retired employees are <u>not</u> leaving this area. What better testimony to their feeling of plant safety could you want?	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-94	STATEMENT OF MARY NIEDZWIECKI PRAYER FOR PEACE GROUP 5 D NANCY LANE AIKEN SC 29801	
A-94-01	Quote by Dr. Helen Caldicotte in book <u>"Peacemaking Day by Day"</u> Pax Christi U.S.A. "Unless we get rid of nuclear weapons, we probably won't survive. It seems such a pity. It's taken billions of years for us to evolve, and we're capable of such love and fantastic relationships and great creativity and fantastic art. We're a magnificent species. Yet we've learned how to wipe out the whole of life on earth. And we seem to be heading in that direction, like lemmings." (over) Submitted during Aiken Meeting 6/8/90	Comments noted.

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-95	STATEMENT OF BUTLER C. DERRICK U.S. REPRESENTATIVE CONCERNING THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR CONTINUED OPERATION OF K-, L- AND P-REACTORS AT SAVANNAH RIVER SITE AIKEN, SOUTH CAROLINA JUNE 8, 1990	
A-95-01	The restart of the Savannah River Site reactors is of vital importance to meeting the future National Security aims of the United States. While it is encouraging that Mr. Bush and Mr. Gorbachev had a successful summit, our country should never put itself in a position of negotiating from weakness. The alternative to a successful and environmentally safe restart is unilateral "Structural Disarmament." Renewed production of tritium at the Savannah River Site is the only way to ensure that the United States will meet its security obligations to ourselves and our allies. Our country relies on its nuclear weapons to deter war and our current arsenal is dependent on tritium to keep these weapons operational. I have been briefed on our country's options for obtaining tritium and, quite frankly, the Savannah River reactors should be safely restarted as soon as possible. Since the reactors have been idled the Department of Energy and Westinghouse have committed their resources to a thorough review concerning safety and environmental standards. The results of this review have been addressed in the Environmental Impact Statement. In addition, ultrasonic testing, increased reactor operators training and the establishment of more rigid reactor operations specifications will help ensure a successful restart and a safe production process afterward. As I have stated before, the most vocal critics of the restart strategy are those who want to shut down the reactors permanently. They will not be satisfied with any number of safety initiatives. The U.S. should not put itself in a position of weakness prior to further negotiations with the Soviet Union on arms limitations.	Comments noted.

C-1030

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
	Without a steady production of tritium, our negotiators would have no recourse except to bluff their way to an arms settlement. The best way to guarantee good faith negotiations is to act from a position of strength. The U.S. needs the tritium. The production reactors at the SRS should be restarted as soon as safely possible.	

Table C-8. Public Comments and DOE Responses

Comment Number	Comment	Response
A-96	STATEMENT OF MILTON M. HOENIG SCIENTIFIC DIRECTOR, NUCLEAR CONTROL INSTITUTE ON THE DEPARTMENT OF ENERGY DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR CONTINUED OPERATION OF K-, L-, AND P-REACTORS AT THE SAVANNAH RIVER SITE, AIKEN, SOUTH CAROLINA JUNE 8, 1990	

[Dr. Hoenig's Statement and DOE Responses are presented in Comment
L-37.]

C-1032